Chronic Toxicity Testing and Toxicity Identification Evaluation (TIE) of the Chevron/Cawelo Water District Effluent

Samples collected September 21, 2009, and January 11, 2010

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1. INTRODUCTION

Pacific EcoRisk (PER) has been contracted to perform NPDES compliance evaluations of the acute and chronic toxicity of Chevron USA Inc. and Cawelo Water District (Chevron/Cawelo) effluent. Testing performed on the "Inlet to Reservoir B" effluent samples that were collected on September 21, 2009, and January 11, 2010, resulted in significant reductions in survival, growth, and/or reproduction to the test organisms; the results of the initial toxicity tests that were performed with these samples are summarized below (note – TUc calculated as 100/NOEC):

September 21, 2009, "Inlet to Reservoir B" Effluent Sample

Effects of Chevron/Cawelo Effluent (Inlet to Reservoir B) on *Ceriodaphnia dubia*
There were significant reductions in reproduction; the reproduction NOEC was 50% effluent, resulting in 2 TUc.

Effects of Chevron/Cawelo Effluent (Inlet to Reservoir B) on Fathead Minnows
There were significant reductions in survival; the survival NOEC was <12.5% effluent, resulting in >8 TUc.

January 11, 2010, "Inlet to Reservoir B" Effluent Sample

Effects of "Inlet to Reservoir B" Effluent on *Ceriodaphnia dubia*
There were significant reductions in reproduction; the reproduction NOEC was 75% effluent, resulting in 1.3 TUc.

Effects of "Inlet to Reservoir B" Effluent on Fathead Minnows
There were significant reductions in survival; the survival NOEC was 25% effluent, resulting in 4 TUc. There were further significant reductions in growth; the growth NOEC was 12.5% effluent, resulting in 8 TUc.

In response to these observations of significant toxicity, Toxicity Identification Evaluations (TIEs) were performed. Due to the low magnitude of the toxicity of the 1/11/10 effluent sample to *C. dubia*, the TIE of this sample was limited to the fathead minnows.

This report describes the performance and results of these tests.

2. TOXICITY TEST AND TIE PROCEDURES

The methods used in conducting the standard chronic toxicity tests followed EPA testing manual "Short-Term Methods for Estimating the Chronic Effects of Effluents and Receiving Waters to Freshwater Organisms, Fourth Edition" (EPA-821-R-02-013).

The methods used in performing the Phase I and Phase II TIE treatments followed the guidelines established by the following EPA manuals:

- Methods for Aquatic Toxicity Identification Evaluations: Phase I Toxicity Characterization Procedures. EPA-600/6-91/003 (Second Edition). U.S. EPA, Environmental Research Laboratory, Duluth, MN;
- Toxicity Identification Evaluation: Characterization of Chronically Toxic Effluent, Phase I. EPA-600-6-91-005F. U.S. EPA, Environmental Research Laboratory, Duluth, MN;
- Methods for Aquatic Toxicity Identification Evaluations: Phase II Toxicity Identification Procedures for Samples Exhibiting Acute and Chronic Toxicity. EPA-600/R-92/080. U.S. EPA, Environmental Research Laboratory, Duluth, MN;
- Toxicity Reduction Evaluation Protocol for Municipal Wastewater Treatment Plants. EPA-600/2-88/062 1989. U.S. EPA, Risk Reduction Engineering Laboratory, Cincinnati, OH;
- Generalized Methodology for Conducting Industrial Toxicity Reduction Evaluations (TREs). EPA-600/2-88/070 1989. U.S. EPA, Risk Reduction Engineering Laboratory, Cincinnati, OH.

2.1 Sample Receipt and Handling

On September 21 (2009) and January 10 (2010), Precision Analytical staff collected samples of "Inlet to Reservoir B" effluent into appropriately cleaned sample containers. These samples were transported on the day of collection, on ice and under chain-of-custody, to the PER laboratory in Fairfield. Upon receipt at the testing laboratory, aliquots of the sample were collected for analysis of initial water quality characteristics (Table 1), with the remainder of the samples being stored at 0-6°C except when being used to prepare test solutions. The chain-of-custody records for the collection and delivery of these samples are provided in Appendix A.

Table 1. Initial water quality characteristics of the 'Inlet to Reservoir B' effluent samples.

Sample Collection Date	Temp (°C)	pH	D.O. (mg/L)	Alkalinity (mg/L)	Hardness (mg/L)	Conductivity (μS/cm)	Total Ammonia (mg/L N)
9/21/09	10.7	6.85	4.8	198	76	794	<1.0
1/11/10	1.1	6.77	4.6	210	88	807	<1.0

2.2 Survival and Reproduction Toxicity Testing with *Ceriodaphnia dubia*

The short-term chronic *C. dubia* test consists of exposing individual females to effluent for the length of time it takes for the Lab Control treatment females to produce 3 broods (typically 6-8 days), after which effects on survival and reproduction are evaluated. The specific procedures used in this test are described below.

The Lab Water Control treatment for these tests consisted of a mixture of Type 1 lab water (reverse-osmosis, de-ionized water) with a commercial spring water (Perrier®). The Lab Water and the effluent sample (and TIE treated effluent samples) were used to prepare test solutions at the 50% and 100% effluent concentrations. For each treatment, ~150 mL of test solution was amended with the alga *Selenastrum capricornutum* and Yeast-Cerophyll®-Trout Food (YCT) to provide food for the test organisms. "New" water quality characteristics (pH, D.O., and conductivity) were measured on these food-amended test solutions prior to use in this test. Every other day of the tests, fresh test solutions and a "new" set of replicate cups were prepared and characterized, as before.

There were 5 replicates for each test treatment, each replicate consisting of 15 mL of test solution in a 30-mL plastic cup. These "3-brood" tests were initiated by allocating one neonate (<24 hrs old) *Ceriodaphnia*, obtained from ongoing laboratory cultures, into each replicate. The replicate cups were placed into a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod.

Each test replicate cup was examined every other day, with surviving "original" individual organisms being transferred to the corresponding new cup containing fresh test solution. The contents of each remaining "old" replicate cup were carefully examined, and the number of neonate offspring produced by each original organism was determined, after which "old" water quality characteristics (pH, D.O., and conductivity) were measured for the old media from one randomly-selected replicate at each treatment.

After it was determined that ≥ 60% of the *C. dubia* in the Lab Water Control treatment had produced their third brood of offspring, the accompanying tests were terminated. The resulting survival and reproduction (number of offspring) data were analyzed to evaluate any impairment(s) caused by the effluent; all statistical analyses were performed using the CETIS® statistical software.

2.3 Survival and Growth Toxicity Testing with Larval Fathead Minnows

The chronic fathead minnow test consists of exposing larval fish to effluent for 7 days, after which effects on survival and growth are evaluated. The specific procedures used in this test are described below.

The Lab Water Control treatment for this test consisted of US EPA synthetic moderately-hard water. The Lab Water and the effluent sample (and the TIE treated effluent samples) were used to prepare daily test solutions at the 50% and 100% effluent concentrations. "New" water quality characteristics (pH, D.O., and conductivity) were measured on these test solutions prior to use in this testing.

There were 2-3 replicates at each test treatment, each replicate consisting of 400 mL of test media in a 600-mL glass beaker. This test was initiated by randomly allocating 10 larval fathead minnows (<48 hrs old) into each replicate. The replicate beakers were placed in a temperature-controlled room at 25°C, under cool-white fluorescent lighting on a 16L:8D photoperiod. The test fish were fed brine shrimp nauplii daily.

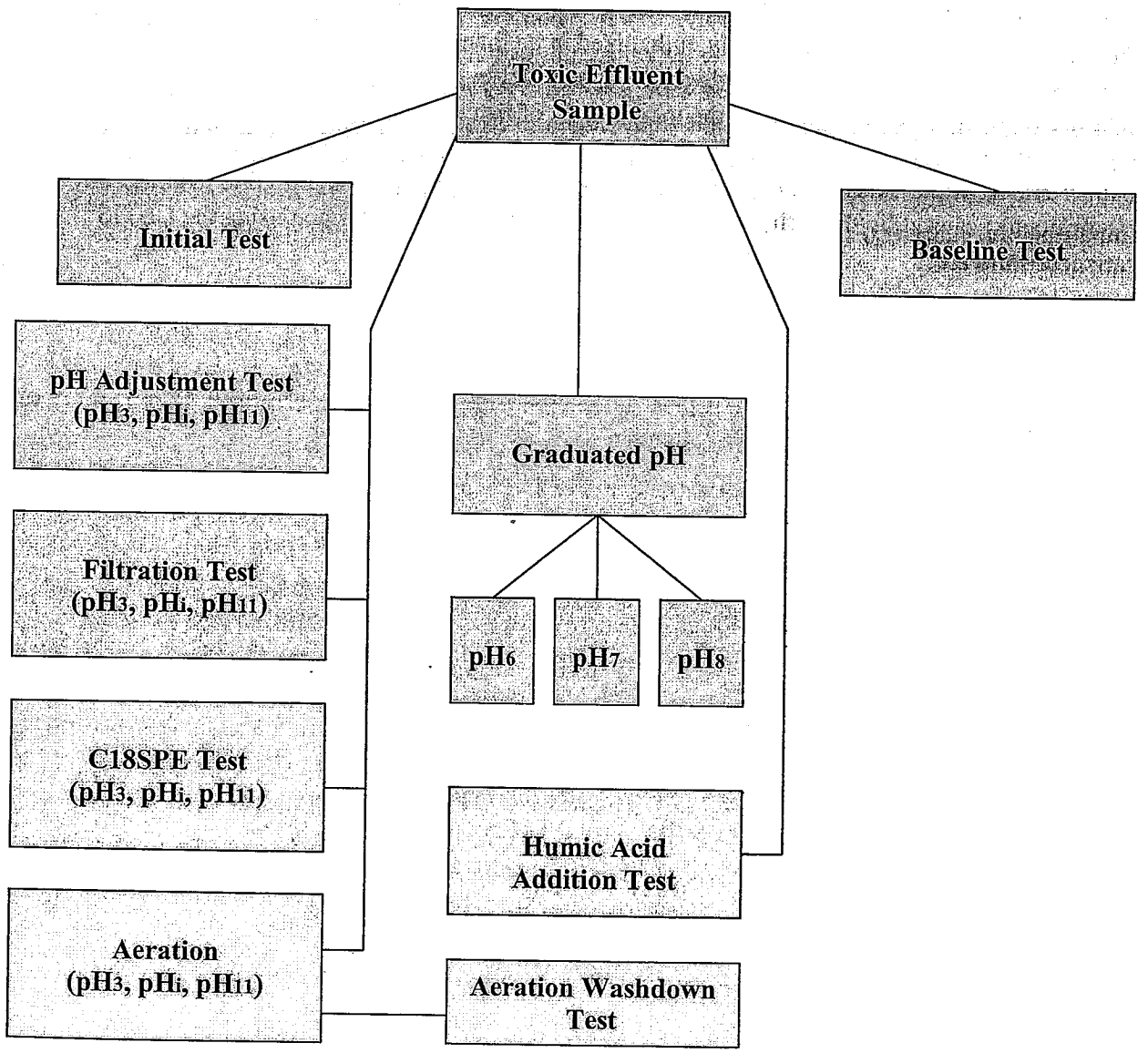
Each replicate was examined daily, with any dead animals, uneaten food, wastes, and other detritus being removed. The number of live fish in each replicate was determined and then approximately 80% of the test media in each beaker was carefully poured out and replaced with fresh test solution. "Old" water quality characteristics (pH, D.O., and conductivity) were measured on the old test water that had been discarded from one randomly-selected replicate at each treatment.

After 7 days exposure, the number of live fish in each replicate beaker was recorded. The fish from each replicate were then carefully euthanized in methanol, rinsed in de-ionized water, and transferred to a pre-dried and pre-tared weighing pan. These fish were then dried at 100°C for >24 hrs and re-weighed to determine the total weight of fish in each replicate; the total weight was then divided by the initial number of fish per replicate (n=10) to determine the "biomass value". The resulting survival and growth ("biomass value") data were analyzed to evaluate any impairment(s) caused by the effluent; all statistical analyses were performed using the CETIS® statistical software.

2.4 Phase I TIE Testing Procedures

The goal of the Phase I TIE is to determine the class of compounds (organics, metals, ammonia, etc.) responsible for effluent toxicity. This is achieved by performing physical and chemical manipulations on the effluent samples. The observed changes in effluent toxicity that result from these manipulations provide clues as to the nature of toxicity. As per consultation with Chevron staff, and based upon the observation of significant toxicity to fathead minnows being removed by the C18 treatment of the 9/21/09 effluent sample, the Phase I TIE of the 1/11/10 effluent sample was "targeted" towards the C18 treatment, and included the Graduated pH (pH6, pH7, and pH8 treatments) to evaluate possible pH lability of any organic toxicants.

Figure 1: Phase I Toxicity Identification Evaluation Fractionation Procedures



2.4.1 TIE Treatment Method Blanks

As part of the TIE process, a method blank is utilized for each TIE treatment to determine whether any of the treatment procedures contribute any artifactual toxicity to the manipulated sample. The treatment method blanks for this test consisted of aliquots of the Lab Control water (for each species) that were subjected to each of the test treatments discussed below.

2.4.2 Baseline Testing

The Baseline toxicity test is performed concurrently with the TIE fractionation tests, and consists of a test of the untreated effluent sample to assess toxicity at the time of the performance of the TIE, and to serve as a reference benchmark against which toxicity removal by the other TIE treatments can be assessed. The physical chemical nature of the compound(s) responsible for the observed toxicity can be determined by the pattern of toxicity removal by the TIE treatments relative to the Baseline test.

2.4.3 pH Adjustment Treatments

Separate aliquots of the effluent sample were adjusted to pH3 and pH11, manipulations that can affect the solubility, polarity, volatility, stability and speciation of potentially toxic compound(s). The sample pH was decreased to pH3 or increased to pH11 by adding reagent grade HCI or NaOH to the test sample. An aliquot of each pH-adjusted effluent sample was immediately poured off and set aside for assessment of the pH adjustment treatment itself, with the remainder of each sample being allowed to sit for 1 hr until used in subsequent filtration, C18SPE, and aeration treatment manipulations. At the end of the day, all pH-manipulated samples were re-adjusted to the initial Baseline pH (pHi) of the sample. The pH-adjusted effluent samples and all appropriate method blanks were then tested to determine if changes in effluent toxicity had occurred as a result of the pH-adjustment manipulation.

2.4.4 Filtration Treatment

Filtration of the effluent sample can affect sample toxicity through the removal of toxicants associated with suspended particulates or other filterable material. In addition, some contaminants can sorb to the filter membrane. This treatment also determines the effects of pH adjustment in combination with filtration: by filtering pH-adjusted aliquots of effluent, compounds typically in solution at pH_i but which are insoluble or associated with particles to a greater extent at more extreme pH's are removed. Aliquots of effluent and method blank samples at pH3, pHi, and pH11 were filtered through either a 0.45 μm or 1 μm filter membrane. At the end of the day, all pH-manipulated samples were re-adjusted back to pHi. The manipulated effluent samples and all appropriate method blanks were then tested to determine if changes in effluent toxicity had occurred as a result of filtration.

2.4.5 C18 Solid Phase Extraction (SPE) Treatment

The C18SPE test is used to identify effluent toxicity that is due to compounds that are removed or sorbed onto chromatographic resin (i.e., C18 columns) specific for non-polar organic compounds. This treatment also determines the effects of pH adjustment and filtration in

combination with C18SPE extraction: at pH3 and pH9, organic bases and acids, respectively, can be made more or less polar by shifting the equilibrium between the ionized vs. un-ionized species, affecting their affinity for the C18 sorbant. Prior to passage over the C18SPE column, the preliminary aliquots of filtered pH11 effluent sample and method blank were re-adjusted to pH9 (C18 column degradation will occur at >pH9). Appropriate aliquots of pH3, pHi, and pH9 effluent sample at were passed over a C18 columns. The first 25 mL of solution that passed through each column was discarded, after which the remaining C18SPE treated samples were collected. At the end of the day, all pH-manipulated samples were re-adjusted back to pHi. The manipulated effluent samples and all appropriate method blanks were then tested to determine if changes in effluent toxicity had occurred as a result of C18SPE.

Upon completion of the Phase I TIE C18SPE treatment, the C18 columns were frozen for potential follow-up Phase II TIE work.

2.4.6 Aeration Treatment

This TIE fractionation is designed to determine the extent of effluent toxicity that can be attributed to volatile, sublatable, or oxidizable compounds. This treatment also determines the effects of pH adjustment in combination with aeration (some compounds can be removed or oxidized more easily under acidic or basic conditions). Aliquots of pH3, pHi, and pH11 effluent were aerated in graduated cylinders under a ventilation hood for 1 hr. After this aeration period, the aerated effluent samples were carefully siphoned off into glass beakers to ensure that any compounds deposited on the aeration glassware via sublation (e.g., foam) were not introduced back into the sample. At the end of the day, all pH-manipulated samples were re-adjusted back to pHi. The aeration-treated effluent samples and all appropriate method blanks were then tested to determine if changes in effluent toxicity had occurred as a result of aeration.

2.4.7 Aeration Washdown Treatment

This treatment is intended to determine if compounds isolated during the aeration treatment can be used to recover toxicity. While the aeration procedure is underway, it was noted that the pH 11 aeration treatment had the most foam and deposits on the glass graduated cylinder. After the effluent was siphoned out of the cylinder, the cylinder was rinsed with control water to remove any compounds on the walls, and the rinsate was then diluted back up the 1X sample volume control water. The aeration-washdown media was then tested to determine if any toxicity that might have been removed by the aeration treatment could be recovered in the washdown media.

2.4.8 Graduated pH Adjustment Treatment

The graduated pH tests are performed to determine whether effluent toxicity is caused by compounds whose toxicity is pH-dependent. For example ammonia, which is common in many effluents, is generally much less toxic in its ionized form (NH_4^+, the dominant form at lower pH levels) relative to its un-ionized form (NH_3, the dominant form at higher pH levels). In addition, pH differences can also affect metal toxicity through changes in solubility and speciation.

The effluent sample pH is adjusted to pH6, pH7, and pH8 by adding reagent grade HCl and/or NaOH to the test sample until the pH reading is ± 0.1 pH units of the target pH. Throughout the day, all samples are readjusted to the target pH. The pH-adjusted effluent solutions and method blanks were then tested to determine if changes in effluent toxicity occurred as a result of the increase or decrease in pH relative to the Baseline (initial) conditions.

2.4.9 Piperonyl Butoxide (PBO) Treatment

The PBO treatment is used to identify contaminants whose toxicity is mediated by the Cytochrome P-450 (Cyp450) enzyme system. PBO inactivates this enzyme system, so that the toxicity of contaminants whose toxicity would have been removed by Cyp450 is increased (e.g., pyrethroid pesticides, etc), whereas the toxicity of contaminants whose toxicity would have been increased by Cyp450 is reduced (e.g., OP pesticides [such as chlorpyrifos], etc.). To prepare the PBO treatments, aliquots of the effluent were spiked with PBO at concentrations of 25 μg/L and 100 μg/L. The PBO-treated solutions and method blanks were then tested to determine if changes in effluent toxicity occurred as a result of the PBO addition.

2.4.10 Humic Acid Treatment

This fractionation treatment is designed to characterize effluent toxicity caused by materials that will sorb to dissolved organic carbon. The addition of humic acid to the sample can produce non-toxic complexes (via chelation or sorption) with potentially toxic compounds. Aliquots of the effluent were spiked with humic acid at two test concentrations: 20 mg/L and 40 mg/L. After mechanical mixing for 1 hr, the samples were stored in the dark at 4°C until used for test initiation the following day. The treated effluent samples and corresponding method blanks were then tested to determine if changes in effluent toxicity had occurred as a result of humic acid addition.

2.5 Phase II TIE Testing Procedures - Toxicity Recovery in the C18SPE Eluate

The goal of the Phase II TIE is to identify specific contaminants responsible for effluent toxicity. As per consultation with Chevron staff, this Phase II TIE was targeted towards identification of contaminants adsorbed to the C18SPE columns that had removed significant amounts of the toxicity present in the effluent samples.

Upon completion of the Phase I TIE C18SPE treatment, the C18 columns had been frozen for potential follow-up Phase II TIE work. A sub-set of these frozen columns was removed from the freezer and thawed out to room temperature. The C18 columns were then eluted and the eluate was tested for recovery of the initially-observed toxicity.

2.5.1 Initial Evaluation of Toxicity Recovery in the C18SPE Eluate

The C18 columns were eluted with 100% methanol and the eluate was collected and diluted back up to the 1X effluent concentration for toxicity testing. Method blank columns were similarly eluted. *C. dubia* and fathead minnows were tested at the 50% (= 0.5X) and 100% (= 1X) effluent

concentrations. Additional aliquots of the effluent were tested to provide a Baseline treatment.

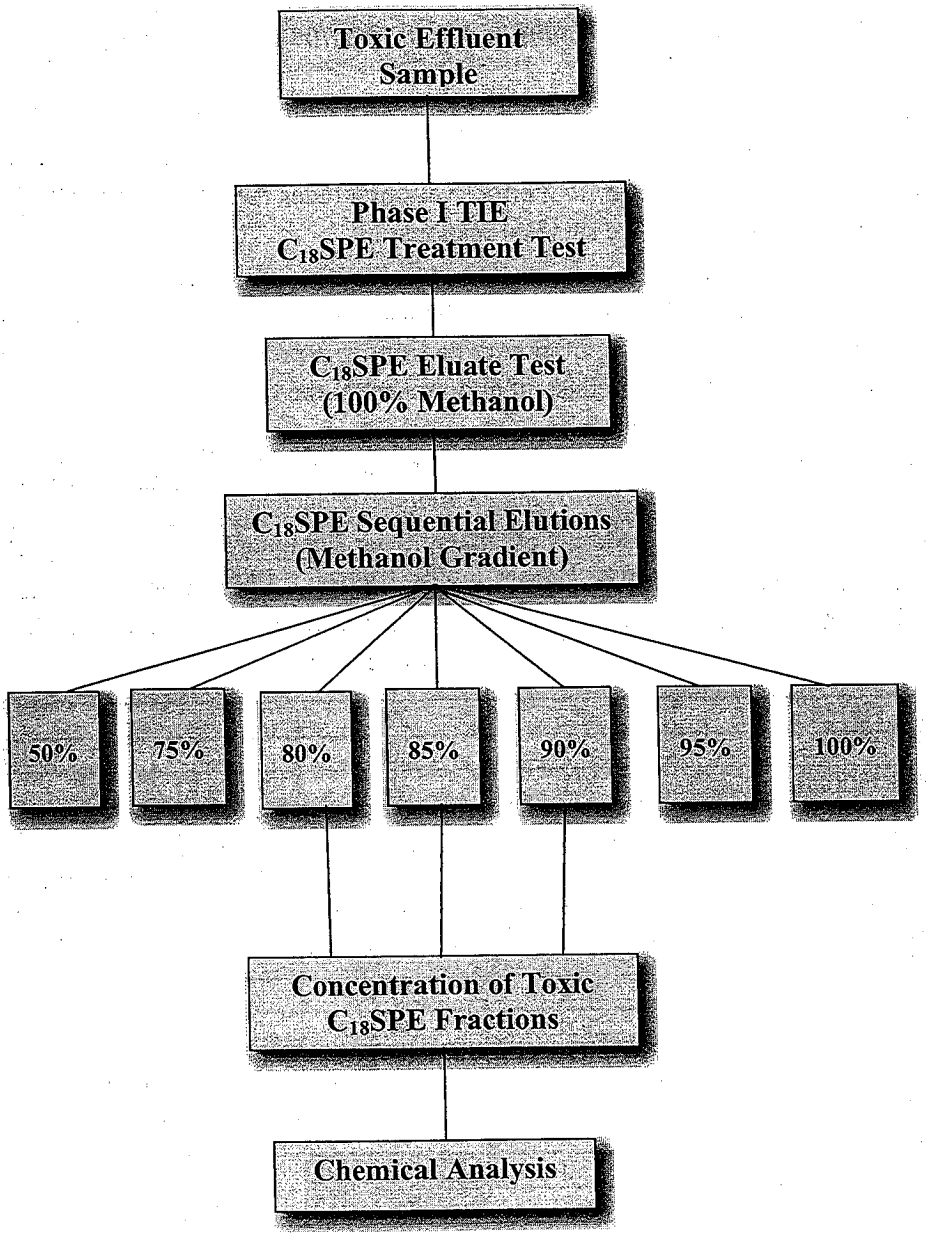
2.5.2 Evaluation of Toxicity Recovery by Sequential C18 Elutions

Because there are a large number of organic compounds present in typical refinery and/or municipal wastewater, the Phase II TIE process was intended to separate the toxic components from the non-toxic components, thus simplifying, or "cleaning up", the sample matrix and allowing for the identification of the compound(s) responsible for toxicity in the effluent. The Phase II TIE procedures included the sequential elution of C18SPE columns over a methanol gradient of 50-100% methanol, identification of toxic eluate fractions, compositing and back-concentration of toxic fractions and re-elution into 100% methanol in preparation for subsequent chemical analyses (e.g., Gas Chromatography/Mass Spectrometry (GC/MS)).

A set of the remaining frozen C18 columns were thawed to room temperature and eluted sequentially with 2 mL of each of seven methanol concentrations (50, 75, 80, 85, 90, 95, and 100%). The eluate of each methanol concentration was diluted in control water to make stock solutions of 4X effluent concentration and used for testing on *C. dubia* and fathead minnows at the 1X, 2X, and 4X concentrations. Sequential elutions were similarly performed on the method blank columns. Additional aliquots of the effluent were tested to provide a Baseline treatment.

The remaining eluate of each methanol concentration was kept refrigerated for the duration of the test. After recovery of toxicity was observed in the 80%, 85%, and 90% eluate solutions, the 80%, 85%, and 90% eluate concentrations and their corresponding blanks were shipped on ice to Dr. Cliff Lange at Auburn University for chemical analysis of selected volatile organic compounds, naphthenic acids, naphthalenes, phenolics, alkanes, and amines.

Figure 2. Phase II Toxicity Identification Evaluation Fractionation Procedures



3. PHASE I TIE RESULTS

3.1 Phase I TIE Results for *Ceriodaphnia dubia* - 9/21/09 Effluent Sample

As in the initial test of this effluent sample, there was ***no*** significant toxicity to *C. dubia* survival in the untreated (Baseline) effluent when compared to the Lab Control. The absence of significant toxicity to *C. dubia* survival effectively precludes the ability of the TIE treatments to provide meaningful results for the survival response.

The reproduction results of this TIE are summarized below in Table 2. As in the initial test of this effluent sample, there were significant reductions in reproduction in the untreated effluent, confirming that the toxicity was persistent and present at the time of the TIE.

Table 2. Effects of the TIE treatments on the toxicity of the "Inlet to Reservoir B" effluent to *Ceriodaphnia dubia* reproduction.

TIE Treatment	Mean # of Offspring per Surviving Female[a]			Toxicity Removal?
	Control/Blank	50% effluent	100% effluent	
Baseline	37.7	34.3	8.7	
pH3	28.0	38.4	4.4	no
pH11	31.8	29.8	12.8	no
pH3 Filtration	32.3	32.8	8.5[b]	b
pHi Filtration	34.6	36.2	15.8	**partial removal**
pH11 Filtration	28.0	34.8	4.8	no
pH3 C18SPE	34.0	37.8	31.2	**Yes**
pHi C18SPE	c	38.0	38.2	**Yes**
pH9 C18SPE	31.2	34.0	24.4	**Yes**
pH3 Aeration	29.3	29.8	c	could not be determined
pHi Aeration	28.2	35.4	11.7	no
pH11 Aeration	29.0	34.2	7.5	no
pH11 Aeration Washdown	39.0	47.2	44.2	toxicity not recovered
PBO 25 µg/L	43.3	37.2	12.5	no
PBO 100 µg/L	40.0	3.5	0.0	toxicity increased
Humic Acid 20 mg/L	36.0		23.7	**Yes**
Humic Acid 40 mg/L	29.3		29.0	**Yes**

a - In order to evaluate the effects of the effluent on the *C. dubia* reproduction response without any interfering effects of variability in the survival response, mean reproduction responses were limited to surviving organisms.

b - Based upon the observation of at least one replicate for which the dying female exhibited greater than the reported mean # of offspring at least 2 days prior to test termination, it is expected that the true mean # of offspring for this test treatment was higher than is reported.

c - Due to technician error, the test replicates for this test treatment were terminated prior to the actual test termination for the remaining test treatments.

Key TIE Observations:

- There was a partial removal of toxicity by the pHi (and pH3) filtration treatments, which suggests that some fraction of the toxicants present had a high affinity for sorption to

particulates or that may have had an affinity for sorption to the filter membrane; furthermore, this affinity for sorption was pH-dependent, increasing as pH decreased;

- Toxicity was effectively removed by the C18SPE treatments at all pH Adjustments, indicating that organic contaminants were a primary cause of the observed toxicity;
- There was significant removal of toxicity by the 20 mg/L and 40 mg/L humic acid treatments, with greater removal relative to the method blank being exhibited at the 40 mg/L treatment, indicating that contaminants amenable to sorption to dissolved organic carbon were a primary cause of the observed toxicity;
- There was an increase in toxicity at the 100 μg/L PBO treatment (particularly apparent at the 50% effluent concentration), which indicates the presence of contaminants that normally would be detoxified by the Cyp450 enzyme system.

These test results are indicative of one or more organic contaminants that have a strong affinity for sorption to particulates and dissolved organic carbon. The PBO test results indicate that the contaminant is of the type that is detoxified by the Cyp450 enzyme system. Based upon recent studies reporting the presence of pyrethroid pesticide in municipal wastewater treatment plant effluents, this is suggestive of pyrethroids as a cause of toxicity. However, other contaminants (e.g., some petroleum hydrocarbons) may also fit this profile.

The test data for this TIE is presented in Appendix B.

3.2 Phase I TIE Results for Fathead Minnows - 9/21/09 Effluent Sample

The survival results of this TIE are presented in Table 3a below. As in the initial test of the 9/21/09 effluent sample, there were significant reductions in survival in the untreated (Baseline) effluent, confirming that toxicity was persistent and present at the time of the TIE.

Table 3a. Effects of the TIE treatments on the toxicity of the "Inlet to Reservoir B" effluent to fathead minnow survival.

TIE Treatment	Mean % Survival			Toxicity Removal?
	Control/Blank	50% effluent	100% effluent	
Baseline #1	90	60	0	[redacted]
Baseline #2[a]	95	50	5	[redacted]
pH3[a]	85	80	0	no effect
pH11[a]	90	65	0	no effect
pH3 Filtration[a]	95	90	55	**significant removal**
pHi Filtration	90	45	0	no
pH11 Filtration[a]	90	90	0	no
pH3 C18SPE	85	90	90	**Yes**
pHi C18SPE	95	100	90	**Yes**
pH9 C18SPE	85	95	85	**Yes**
pH3 Aeration	80	5	0	increase in toxicity
pHi Aeration	100	40	0	no
pH11 Aeration	80	35	0	no
pH11 Aeration Washdown	75	100	95	toxicity not recovered
Humic Acid (20 mg/L)	95	[redacted]	5	no
Humic Acid (40 mg/L)	70	[redacted]	5	no

a - Due to the observation of pathogen infection that was observed in some of the fish at this test treatment within the first 96 hrs of testing, this test treatment was re-initiated with new fish; Baseline #2 was run concurrently with these re-tests.

Key TIE Observations:

- There was removal of survival toxicity by the pH3 Filtration treatment, which suggests that some fraction of the toxicants present were associated with particulates, or that the toxicant(s) may have had an affinity for sorption to the filter membrane, and that this affinity for sorption increased as pH decreased;
- There was complete removal of toxicity by the C18SPE treatment at all three pH manipulations, indicating that non-polar organics were a major cause of the observed toxicity;
- In contrast to the *C. dubia* TIE results, there was no significant removal of toxicity by the humic acids treatments, which suggests that there may be different toxicants causing the toxicity to these two different species, with the *C. dubia* toxicants having a greater affinity for sorption.

The growth results of the TIE are summarized below in Table 3b, and generally mirror those of the survival data.

Note that in order to eliminate the effects of mortalities on the growth response, the growth endpoint being measured is "Mean Dry Weight" as opposed to the Biomass Value that is used for NPDES compliance evaluation.

Table 3b. Effects of the TIE treatments on the toxicity of the "Inlet to Reservoir B" effluent to fathead minnow growth.

TIE Treatment	Mean Dry Weight (mg)			Toxicity Removal?
	Control/Blank	50% effluent	100% effluent	
Baseline #1	0.27	0.19	0	
Baseline #2[a]	0.29	0.26	0.06	
pH3[a]	0.35	0.21	0	no effect
pH11[a]	0.35	0.31	0	no effect
pH3 Filtration[a]	0.32	0.29	0.28	**significant removal**
pHi Filtration	0.32	0.30	0	no
pH11 Filtration[a]	0.28	0.28	0	no
pH3 C18SPE	0.28	0.28	0.26	**a**
pHi C18SPE	0.32	0.30	0.32	**Yes**
pH9 C18SPE	0.26	0.27	0.28	**Yes**
pH3 Aeration	0.34	0.26	0	no
pHi Aeration	0.30	0.19	0	no
pH11 Aeration	0.28	0.18	0	no
pH11 Aeration Washdown	0.34	0.30	0.30	toxicity not recovered
Humic Acid 20 mg/L	0.31		0.09	no
Humic Acid 40 mg/L	0.38		0.03	no

a – Toxicity had been removed by the precursor filtration treatment.

The test data and summary of statistics for this TIE testing are provided in Appendix C.

3.3 Phase I TIE Results for Fathead Minnows - 1/11/10 Effluent Sample

The results of this TIE are presented in Table 4. As per consultation with Chevron staff, and based upon the observation of significant toxicity to fathead minnows being removed by the C18 treatment of the 9/21/09 effluent sample, the Phase I TIE of the 1/11/10 effluent sample was "targeted" towards the C18 treatment, and included the Graduated pH (pH6, pH7, and pH8) treatments to evaluate possible pH lability of any organic toxicants. Also, as the fathead minnow growth response did not provide any additional interpretive value in the previous TIE, this TIE was limited to evaluation of the survival response.

Table 4. Effects of the TIE treatments on the toxicity of the Chevron/Cawelo "Inlet to Reservoir B" effluent to fathead minnow survival.

TIE Treatment	Mean % Survival			Toxicity Removal?
	Control/Blank	50% effluent	100% effluent	
Baseline #1	80	93.3	13.3	
Test at pH6	80	0	0	toxicity increased
Test at pH7	86.7	66.7	6.7	slight increase
Test at pH8	73.3	80	46.7	partial reduction
Baseline #2	100	80	13.3	
pH3 Adjustment	100	100	26.7	slight removal
pH9 Adjustment	100	86.7	20	slight removal
pH3 Filtration	100	100	93.3	**YES**
pHi Filtration	100	100	73.3	**YES**
pH9 Filtration	100	93.3	86.7	**YES**
pH3 C18SPE	66.7	100	80	a
pHi C18SPE	100	93.3	100	residual toxicity removed
pH9 C18SPE	100	100	100	residual toxicity removed

a – Toxicity had been removed by the precursor filtration treatment.

Key TIE Observations:

As in the initial test of the 1/11/10 effluent sample, there were significant reductions in survival in the untreated (Baseline) effluent, confirming that this toxicity was persistent and present at the time of the TIE.

- There was pH-labile toxicity, with toxicity increasing as pH decreased to pH6, and toxicity decreasing as pH increased to pH8. This is suggestive of a weakly acidic toxicant that becomes less polar as the pH decreases and more polar as the pH increases. This type of pattern would be consistent with naphthenic acids as a cause of toxicity;
- There was significant removal of survival toxicity by the filtration treatments, which suggests that some fraction of the toxicants present were associated with particulates;

- There was complete removal of and residual toxicity (i.e., toxicity remaining after the filtration treatment) by the C18SPE treatment, indicating that non-polar organics were a cause of the observed toxicity.

The test data the initial TIE with fathead minnows are presented in Appendix D.

4. PHASE II TIE RESULTS

4.1 Phase II TIE: C18 Column Elution Toxicity Recovery Results

The C18 columns that had been used to treat the 9/21/09 effluent sample were eluted with 100% methanol and the eluate was then tested to determine if the toxicity that had been removed from the effluent samples by the C18 columns could be recovered in the C18 column eluate.

4.1.1 Recovery of C18 Column Eluate Toxicity to *Ceriodaphnia dubia*

The reproduction results of the C18 eluate toxicity test with *C. dubia* are summarized in Table 5. There was a significant reduction in reproduction in the "New" untreated (Baseline) 100% effluent indicating that the toxicity that had been observed in the initial testing of the effluent was still present. However, the magnitude of the observed toxicity was less than that observed in the initial toxicity test and in the Phase I TIE; this reduction in the magnitude of the toxicity suggests that:

1. the contaminant(s) in the effluent had become more strongly bound to particulates and/or the effluent sample container during the interim sample storage period; and/or
2. the contaminant(s) in the effluent had undergone some degradation during the interim sample storage period.

There was significant recovery of reproduction toxicity from the columns that had removed the toxicity in the previous Phase I TIE C18SPE treatment. However, the magnitude of the toxicity that was recovered was less than that which had been removed in the Phase I TIE; this reduction in the magnitude of the toxicity recovery likely reflects incomplete desorption of the bound contaminants by 100% methanol (note that methanol is a much weaker solvent than other compounds such as methylene chloride).

The test data sheets and summary of statistics for this testing are provided in Appendix E.

Table 5. Recovery of C18 column eluate toxicity to *Ceriodaphnia dubia* reproduction.

TIE Treatment	Mean # of Offspring per Surviving Female[a]			Toxicity Recovery?
	Control/Blank	50% effluent	100% effluent	
"New" Baseline[b]	27.0	26.6	16.4	
"Old" Baseline[c]	37.7	34.3	8.7	
100% C18 Eluate	21.0	22.8	14.5	**YES**

a - In order to evaluate the effects of the effluent on the *C. dubia* reproduction response without any interfering effects of variability in the survival response, mean reproduction responses were limited to surviving organisms.

b - This was a new test of the effluent sample that had been collected on 9/21/09 and which had been stored between that time and the time of the current Phase II TIE testing.

c - This was the Baseline test that was performed in the initial TIE of the 9/21/09 sample (during which the c18 columns which were eluted in the current testing had originally been processed and frozen).

4.1.2 Recovery of C18 Column Eluate Toxicity to Fathead Minnows

The results of the C18 eluate toxicity test with fathead minnows are summarized in Tables 6a and 6b. There were significant reductions in survival and growth in the untreated (Baseline) 100% effluent indicating that the toxicity that had been observed in the initial testing of the effluent was still present. However, the magnitude of the observed toxicity was less than that observed in the initial toxicity test and in the Phase I TIE; this reduction in the magnitude of the toxicity suggests that:

1. the contaminant(s) in the effluent had become more strongly bound to particulates and/or the effluent sample container during the interim storage period; and/or
2. the contaminant(s) in the effluent had undergone some degradation during the interim sample storage period.

There was significant recovery of survival and growth toxicity from the columns that had removed the toxicity in the previous Phase I TIE C18SPE treatment. However, the magnitude of the toxicity that was recovered was less than that which had been removed in the Phase I TIE; this reduction in the magnitude of the toxicity recovery likely reflects incomplete desorption of the bound contaminants by 100% methanol (note that methanol is a much weaker solvent than other compounds such as methylene chloride).

The test data sheets and summary of statistics for this testing are provided in Appendix F.

Table 6a. Recovery of C18 column eluate toxicity to fathead minnow survival.

TIE Treatment	Mean % Survival			Toxicity Recovery?
	Control/Blank	50% effluent	100% effluent	
"New" Baseline[a]	80	86.7	26.7	
"Old" Baseline[b]	90	60	0	
100% C18 Eluate	100	73.3	6.7	**YES**

a - This was a new test of the effluent sample that had been collected on 9/21/09 and which had been stored between that time and the time of the current Phase II TIE testing.

b - This was the Baseline #1 test that was performed in the initial TIE of the 9/21/09 sample (during which the c18 columns which were eluted in the current testing had originally been processed and frozen).

Table 6b. Recovery of C18 column eluate toxicity to fathead minnow growth.

TIE Treatment	Mean Dry Weight (mg)			Toxicity Recovery?
	Control/Blank	50% effluent	100% effluent	
"New" Baseline[a]	0.40	0.30	0.14	
"Old" Baseline[b]	0.27	0.19	0	
100% C18 Eluate	0.40	0.28	0.09	**YES**

a - This was a new test of the effluent sample that had been collected on 9/21/09 and which had been stored between that time and the time of the current Phase II TIE testing.

b - This was the Baseline #1 test that was performed in the initial TIE of the 9/21/09 sample (during which the c18 columns which were eluted in the current testing had originally been processed and frozen).

4.2 Phase II TIE: Toxicity Recovery of Sequential Elutions of the C18 Columns

The C18 columns that had been used to treat the 9/21/09 effluent sample were sequentially eluted with seven methanol concentrations (50, 75, 80, 85, 90, 95, and 100%) and the eluates were then tested to determine if the toxicity that had been removed from the effluent samples by the C18 columns could be recovered in the C18 column eluate fractions.

4.2.1 Toxicity Recovery of Sequential C18SPE Elutions to *Ceriodaphnia dubia*

The results of this testing are summarized in Tables 7a and 7b for survival and reproduction, respectively. There was significant recovery of toxicity to both survival and reproduction at the 80%, 85%, and 90% methanol eluate fractions.

Table 7a. Recovery of sequential C18SPE elutions toxicity to *Ceriodaphnia dubia* survival.

TIE Treatment	Mean % Survival				Toxicity Recovery?
	Control/Blank	1X	2X	4X	
Lab Water Control	100				
50% Methanol	100	80	100	100	no
75% Methanol	100	100	100	100	no
80% Methanol	60	100	100	20	**YES**
85% Methanol	100	100	80	40	**YES**
90% Methanol	60	80	75	40	**YES**
95% Methanol	80	100	80	100	no
100% Methanol	100	80	100	80	no

Table 7b. Recovery of sequential C18SPE elutions toxicity to *Ceriodaphnia dubia* reproduction.

TIE Treatment	Mean # Offspring per Surviving Female[a]				Toxicity Recovery?
	Control/Blank	1X	2X	4X	
Lab Water Control	21.0				
50% Methanol	21.6	27.3	25.4	24.6	no
75% Methanol	18.8	29.0	31.4	17.0	slight
80% Methanol	23.0	24.6	23.2	3.0	**YES**
85% Methanol	19.8	25.8	8.8	0.0	**YES**
90% Methanol	19.0	21.0	19.7	8.5	**YES**
95% Methanol	19.3	22.0	18.3	12.0	partial
100% Methanol	15.4	25.0	22.2	13.0	partial

a - In order to evaluate the effects of the effluent on the *C. dubia* reproduction response without any interfering effects of variability in the survival response, mean reproduction responses were limited to surviving organisms.

4.2.2 Toxicity Recovery of Sequential C18SPE Elutions to Fathead Minnows

The results of this testing are summarized in Table 8. There was significant recovery of survival toxicity at the 80%, 85%, and 90% methanol eluate fractions.

Table 8. Recovery of sequential C18SPE elutions toxicity to fathead minnow survival.

TIE Treatment	Mean % Survival				Toxicity Removal?
	Control/Blank	1X	2X	4X	
Lab Water Control	100				
50% Methanol	100	90	90	90	no
75% Methanol	80	80	30	25	partial
80% Methanol	90	30	5	0	**YES**
85% Methanol	90	20	0	0	**YES**
90% Methanol	100	100	15	0	**YES**
95% Methanol	80	100	80	60	slight
100% Methanol	70	60	100	70	no

5. CHEMICAL ANALYSES OF THE TOXIC C18SPE FRACTIONS

The eluates of the 80%, 85%, and 90% methanol concentrations and their corresponding blanks were shipped on ice to Dr. Cliff Lange at Auburn University for chemical analysis targeted to chemicals that are typical constituents of petroleum refinery operations (e.g., volatile organic compounds, naphthenic acids, naphthalenes, phenolics, alkanes, and amines). The results of these analyses are summarized in Table 9, below.

Of particular interest are the reported concentrations of **naphthenic acids**. Naphthenic acids are naturally occurring linear and cyclic carboxylic compounds associated with the acidic fraction of petroleum, and are recognized as common causes of aquatic toxicity in petroleum refinery effluents. The cumulative measured concentration of the naphthenic acids included in the analyses of in the C18 eluate was ~10.8 mg/L, which is within the LC50 range reported for aquatic organisms. However, it is important to note that the current analysis was limited to 6 representative compounds, whereas there are over 100 naphthenic acid compounds; this suggests that the concentration of total naphthenic acids in the C18 eluate was much greater than the 10.8 mg/L reported for the 6 compounds that were quantified.

Furthermore, it must be noted that in the Phase II TIE C18 elution, methanol is used as the solvent due to the fact the when the eluate is reconstituted to the 1X concentration with Control water, the residual amount of methanol present is below toxicity thresholds. Stronger solvents such as methylene chloride, hexane, etc., would almost certainly have resulted in greater desorption of naphthenic acids from the C18 columns than did methanol, which would have resulted in even higher reported concentrations.

Table 9. Results of targeted chemical analyses of the toxicity C18 column eluate fractions (units = mg/L).

	90% methanol	85% methanol	80% methanol	90% methanol blank	85% methanol blank	80% methanol blank
VOAs						
1,2,4-trimethylbenzene	0.09	0.07	0.07	0.01	0.01	0.00
1-ethyl-2-methyl benzene	0.14	0.11	0.10	0.01	0.01	0.01
1,3-diethyl benzene	0.07	0.05	0.05	0.00	0.00	0.00
1-methyl-3-propyl benzene	0.12	0.10	0.09	0.00	0.00	0.00
1-methyl-3-(1-methylethyl)-benzene	0.08	0.07	0.07	0.01	0.00	0.00
1,2-diethyl benzene	0.22	0.21	0.19	0.01	0.01	0.01
benzene	0.70	0.72	0.65	0.00	0.00	0.00
toluene	0.56	0.47	0.43	0.01	0.01	0.01
p-xylene	0.77	0.62	0.56	0.01	0.01	0.01
ethylbenzene	0.56	0.43	0.39	0.01	0.00	0.00
1-methyl-2-propyl benzene	0.90	0.74	0.69	0.01	0.01	0.01
1,3,5-trimethyl benzene	0.10	0.08	0.07	0.01	0.01	0.01
1,2-dimethylbenzene	0.89	0.92	0.85	0.02	0.01	0.01
1,3-dimethylbenzene	0.74	0.63	0.58	0.01	0.01	0.00
Total VOAs =	**5.94**	**5.22**	**4.79**	**0.12**	**0.09**	**0.07**

Table 9. Results of targeted chemical analyses of the toxicity C18 column eluate fractions (units = mg/L).

	90% methanol	85% methanol	80% methanol	90% methanol blank	85% methanol blank	80% methanol blank
PHENOLICS						
phenol	2.55	2.17	2.05	0.03	0.02	0.02
2-methyl phenol	1.70	1.34	1.23	0.01	0.01	0.01
3-methyl phenol	2.00	1.53	1.39	0.02	0.01	0.01
3,4-dimethyl phenol	1.37	1.13	1.03	0.01	0.01	0.01
3-ethyl phenol	0.38	0.29	0.26	0.00	0.00	0.00
aniline	0.51	0.39	0.35	0.00	0.00	0.00
Total Phenolics =	**8.51**	**6.85**	**6.31**	**0.07**	**0.05**	**0.05**
NAPHTHALENES						
1-methyl-naphthalene	0.09	0.07	0.07	0.01	0.01	0.00
2-methyl-naphthalene	0.14	0.11	0.10	0.00	0.01	0.01
1,5-dimethyl-naphthalene	0.17	0.18	0.16	0.00	0.00	0.00
1,7-dimethyl-naphthalene	0.06	0.05	0.04	0.00	0.00	0.00
naphthalene	0.36	0.28	0.25	0.00	0.00	0.00
Total Naphthalenes =	**0.82**	**0.69**	**0.62**	**0.01**	**0.02**	**0.01**
NAPHTHENIC ACIDS						
cyclohexanecarboxylic acid	0.61	0.51	0.48	0.00	0.00	0.00
methyl,pentyl cyclohexanecarboxylic acid	0.48	0.41	0.39	0.00	0.00	0.00
methyl,pentyl cyclopentanecarboxylic acid	0.59	0.45	0.41	0.01	0.00	0.00
heptylcyclohexanecarboxylic acid	0.78	0.59	0.54	0.01	0.00	0.00
cyclopentanecarboxylic acid	0.96	0.75	0.64	0.01	0.01	0.00
diethylcyclopentanecarboxylic acid	0.84	0.72	0.66	0.01	0.00	0.00
Total Naphthenic Acids =	**4.26**	**3.43**	**3.12**	**0.04**	**0.01**	**0**
AMINES						
diethanolamine	0.34	0.30	0.22	nd	nd	nd
methylamine	0.27	0.22	0.19	nd	nd	nd
ethyl amine	0.17	0.16	0.15	nd	nd	nd
ethanol amine	0.14	0.11	0.10	nd	nd	nd
triazene	0.00	0.00	0.00	nd	nd	nd
methyl diethanol amine	0.11	0.10	0.08	nd	nd	nd
ethylenediamine	0.07	0.06	0.04	nd	nd	nd
Total Amines =	**1.1**	**0.95**	**0.78**	**nd**	**nd**	**nd**

Table 9. Results of targeted chemical analyses of the toxicity C18 column eluate fractions (units = mg/L).

	90% methanol	85% methanol	80% methanol	90% methanol blank	85% methanol blank	80% methanol blank
ALKANES						
3-methyl-1-pentene	0.49	0.37	0.34	0.01	0.01	0.01
decane	0.62	0.47	0.43	0.03	0.02	0.02
2,7-dimethyl octane	0.26	0.25	0.22	0.01	0.01	0.00
4-methyl-nonane	0.30	0.28	0.27	0.01	0.01	0.01
2,6-dimethyloctane	0.25	0.24	0.22	0.01	0.01	0.01
3-ethyl-2methyl-heptane	0.26	0.25	0.24	0.01	0.01	0.01
undecane	0.28	0.27	0.25	0.01	0.01	0.01
dodecane	0.22	0.22	0.21	0.01	0.01	0.00
tridecane	0.34	0.33	0.33	0.01	0.01	0.01
tetradecane	0.16	0.14	0.13	0.01	0.01	0.01
pentadecane	0.19	0.18	0.18	0.01	0.01	0.01
hexadecane	0.34	0.32	0.28	0.01	0.01	0.02
heptadecane	0.11	0.10	0.10	0.00	0.01	0.01
octadecane	0.05	0.05	0.04	0.00	0.00	0.00
nonadecane	0.04	0.03	0.03	0.00	0.00	0.00
eicosane	0.06	0.06	0.06	0.00	0.00	0.00
heneicosane	0.04	0.04	0.03	0.00	0.00	0.00
docosane	0.06	0.06	0.05	0.01	0.01	0.01
octacosane	0.14	0.13	0.12	0.01	0.01	0.01
dotriacontane	0.06	0.05	0.05	0.02	0.02	0.02
tetracontane	0.11	0.11	0.10	0.02	0.01	0.01
Total Alkanes =	**4.38**	**3.95**	**3.68**	**0.2**	**0.19**	**0.18**

6. SUMMARY AND CONCLUSIONS

In response to observations of significant toxicity in the Chevron/Cawelo "Inlet to Reservoir B" effluent samples that havd been collected on September 21, 2009, and on January 11, 2010, Toxicity Identification Evaluations (TIEs) with *Ceriodaphnia dubia* and fathead minnows were performed. Due to the low magnitude of the toxicity of the 1/11/10 effluent sample to *C. dubia*, the TIE of this sample was limited to the fathead minnows.

Phase I TIEs with *Ceriodaphnia dubia*

September 21, 2009, "Inlet to Reservoir B" Effluent Sample

As in the initial test, there was no toxicity to *C. dubia* survival in the untreated effluent. The reduction in reproduction in the untreated effluent is also consistent with the initial test, and confirms that this toxicity was persistent and present at the time of the TIE.

Key TIE Observations:

- There was a partial removal of toxicity by the pHi (and pH3) filtration treatments, which suggests that some fraction of the toxicants present had a high affinity for sorption to particulates or that may have had an affinity for sorption to the filter membrane; furthermore, this affinity for sorption was pH-dependent, increasing as pH decreased;
- Toxicity was effectively removed by the C18SPE treatments at all pH Adjustments, indicating that organic contaminants were a primary cause of the observed toxicity;
- Toxicity was at least partially removed by the 20 mg/L and 40 mg/L humic acid treatments, with greater removal relative to the method blank being exhibited at the 40 mg/L treatment, indicating that contaminants amenable to sorption to dissolved organic carbon were a primary cause of the observed toxicity;
- There was an increase in toxicity at the 100 µg/L PBO treatment (particularly apparent at the 50% effluent concentration), which indicates the presence of contaminants that normally would be detoxified by the Cyp450 enzyme system.

These test results are indicative of one or more organic contaminants that have a strong affinity for sorption to particulates and dissolved organic carbon. The PBO test results indicate that the contaminant is of the type that is detoxified by the Cyp450 enzyme system. Based upon recent studies reporting the presence of pyrethroid pesticide in municipal wastewater treatment plant effluents, this is suggestive of pyrethroids as a cause of toxicity. However, other contaminants (e.g., some petroleum hydrocarbons) may also fit this profile.

Phase I TIEs with Fathead Minnows

September 21, 2009, "Inlet to Reservoir B" Effluent Sample

As in the initial test of the 9/21/09 effluent sample, there were significant reductions in survival in the untreated (Baseline) effluent, confirming that toxicity was persistent and present at the time of the TIE.

Key TIE Observations:

- There was removal of survival toxicity by the pH3 Filtration treatment, which suggests that some fraction of the toxicants present were associated with particulates, or that the toxicant(s) may have had an affinity for sorption to the filter membrane, and that this affinity for sorption increased as pH decreased;
- There was complete removal of toxicity by the C18SPE treatment at all three pH manipulations, indicating that non-polar organics were a major cause of the observed toxicity;
- In contrast to the *C. dubia* TIE results, there was no significant removal of toxicity by the humic acids treatments, which suggests that there may be different toxicants causing the toxicity to these two different species, with the *C. dubia* toxicants having a greater affinity for sorption.

The growth results of this TIE generally mirror those of the survival data.

January 11, 2010, "Inlet to Reservoir B" Effluent Sample

As per consultation with Chevron staff, and based upon the observation of significant toxicity to fathead minnows being removed by the C18 treatment of the 9/21/09 effluent sample, the Phase I TIE of the 1/11/10 effluent sample was "targeted" towards the C18 treatment, and included the Graduated pH (pH6, pH7, and pH8) treatments to evaluate possible pH lability of any organic toxicants. Also, as the fathead minnow growth response did not provide any additional interpretive value in the previous TIE, this TIE was limited to evaluation of the survival response.

As in the initial test of the 1/11/10 effluent sample, there were significant reductions in survival in the untreated (Baseline) effluent, confirming that this toxicity was persistent and present at the time of the TIE.

Key TIE Observations:

- There was pH-labile toxicity, with toxicity increasing as pH decreased to pH6, and toxicity decreasing as pH increased to pH8. This is suggestive of a weakly acidic toxicant that becomes less polar as the pH decreases and more polar as the pH increases. This type of pattern would be consistent with naphthenic acids as a cause of toxicity;
- There was significant removal of survival toxicity by the filtration treatments, which suggests that some fraction of the toxicants present were associated with particulates;

- There was complete removal of and residual toxicity (i.e., toxicity remaining after the filtration treatment) by the C18SPE treatment, indicating that non-polar organics were a cause of the observed toxicity.

Phase II TIE: C18 Column Elution Toxicity Recovery Results

There were significant reductions in *C. dubia* reproduction and fathead minnow survival in the untreated (Baseline) 100% effluent indicating that the toxicity that had been observed in the initial testing of the effluent was still present. However, the magnitude of the observed toxicity was less than that observed in the initial toxicity tests and in the Phase I TIEs; these reductions in the magnitude of the toxicity suggest that:

1. the contaminant(s) in the effluent had become more strongly bound to particulates and/or the effluent sample container during the interim sample storage period; and/or
2. the contaminant(s) in the effluent had undergone some degradation during the interim sample storage period.

There was significant recovery of *C. dubia* reproduction toxicity and fathead minnow survival toxicity from the C18 columns that had removed the toxicity in the previous Phase I TIE C18SPE treatments. However, the magnitude of the toxicity that was recovered was less than that which had been removed in the Phase I TIEs; these reductions in the magnitude of the toxicity recovery likely reflects incomplete desorption of the bound contaminants by 100% methanol (note that methanol is a much weaker solvent than other compounds such as methylene chloride).

Phase II TIE: Toxicity Recovery of Sequential Elutions of the C18 Columns

There was significant recovery of toxicity to both *C. dubia* reproduction and fathead minnow survival at the 80%, 85%, and 90% methanol eluate fractions.

Phase II TIE: Chemical Analyses of Toxic C18SPE Eluate Fractions

The eluates of the 80%, 85%, and 90% methanol concentrations and their corresponding blanks were shipped on ice to Dr. Cliff Lange at Auburn University for chemical analysis targeted to chemicals that are typical constituents of petroleum refinery operations (e.g., volatile organic compounds, naphthenic acids, naphthalenes, phenolics, alkanes, and amines).

Of particular interest are the reported concentrations of **naphthenic acids**. Naphthenic acids are naturally occurring linear and cyclic carboxylic compounds associated with the acidic fraction of petroleum, and are recognized as common causes of aquatic toxicity in petroleum refinery effluents. The cumulative measured concentration of the subset of naphthenic acids included in the analyses of in the C18 eluate was ~10.8 mg/L, which is within the LC50 range reported for aquatic organisms. However, it is important to note that the current analysis was limited to 6

representative compounds, whereas there are over 100 naphthenic acid compounds; this suggests that the concentration of total naphthenic acids in the C18 eluate was much greater than the 10.8 mg/L reported for the 6 compounds that were quantified.

Furthermore, it must be noted that in the Phase II TIE C18 elution, methanol is used as the solvent due to the fact the when the eluate is reconstituted to the 1X concentration with Control water, the residual amount of methanol present is below toxicity thresholds. Stronger solvents such as methylene chloride, hexane, etc., would almost certainly have resulted in greater desorption of naphthenic acids from the C18 columns than did methanol, which would have resulted in even higher reported concentrations.

Conclusions:

The results of this TIE investigation indicate that the contaminants responsible for causing toxicity in the Chevron/Cawelo "Inlet to Reservoir B" effluent have an affinity for sorption to particulates and/or the filtration membrane with that affinity increasing as pH decreases; the graduated pH tests with the fathead minnows indicated a similarly important pH effect with toxicity increasing as pH decreases. These results suggest that the toxicants in the effluent are weakly acidic in nature, becoming less polar as pH decreases.

C18SPE treatment was observed to remove all remaining toxicity indicating that the toxicant(s) are likely organic in nature. The increase in toxicity resulting from PBO treatment further suggests that the organic contaminants are normally detoxified by the Cyp450 enzyme system.

There were some differences in the TIE responses of the *C. dubia* and the fathead minnows, most notably the removal of toxicity to *C. dubia* by the addition of dissolved organic carbon (humic acids), which did not occur for the fathead minnows. This suggests the possibility that there are multiple toxicants present, with one or more of the contaminants that are toxic to *C. dubia* exhibiting greater sorption affinity to dissolved organic carbon.

Most important was the observation of measured concentrations of naphthenic acids in the toxic C18 eluate fractions at concentrations that might be expected to cause toxicity to these aquatic organisms. It is important to note that naphthenic acids also match up with the TIE profiles, in particular the pH lability in conjunction with toxicity removal by C18SPE.

Note that in several places in this report, pyrethroid pesticides may have been mentioned as an example of a contaminant that would also "fit" the TIE profile being observed. This should not be interpreted as a strong signal that it is, in fact, pyrethroid pesticides causing the toxicity. Other contaminants might also be expected to exhibit many of the same TIE responses. However, pyrethroids have recently received a great deal of attention as its use (and identification as a cause of toxicity) has increased in recent years, and it has been observed to cause toxicity in

wastewater treatment plant effluents. On that basis, we would recommend that future toxic effluent samples be analyzed for pyrethroid pesticides.

In toto, these TIE results are strongly indicative of naphthenic acids as a primary cause of the observed toxicity. Arguably, the most common wastewater treatment plant methodology used to address toxicity due to naphthenic acids is treatment with activated carbon. On that basis, we would recommend that any future toxicity testing of effluent samples have an accompanying side-by-side test of activated carbon-treated effluent. It is also recommended that any future toxic effluent samples be analyzed directly for naphthenic acids.

6.1 QA/QC Summary

Test Conditions – Test conditions (pH, D.O., temperature, etc.) were all within acceptable limits for these tests. All analyses were performed according to laboratory Standard Operating Procedures.

Negative Lab Control – The biological responses in the Lab Water Control treatments for these tests were within acceptable limits.

Several Blank treatments in the TIE exhibited toxicity to survival during the test. When this occurred early in the fathead minnow test, the treatments were retested, however, there was insufficient sample to perform retests on any other manipulations.

Positive Control – The results of the concurrent reference toxicant test were consistent with the previous reference toxicant tests performed in our lab for both species, indicating that the test organisms used in the current tests were responding to toxic stress in a typical and consistent fashion.

Concentration Response Relationships – There were valid concentration-response relationships for the reference toxicant tests, which were determined to be acceptable for this testing.

Appendix A

Chain-of-Custody Records for the Collection and Delivery of the Chevron/Cawelo "Inlet to Reservoir B" Effluent Samples

CHAIN OF CUSTODY RECORD

PACIFIC ECORISK
2250 Cordelia Rd
Fairfield, CA 94534
Ph: (707) 207-7760
Fax: (707) 207-7916
www.pacificecorisk.com

RESULTS TO:
CYNTHIA GULDE
CHEVRON CORP.
Attn:
Phone:
Email:

BILL TO:
CYNTHIA GULDE
CHEVRON CORP.
Attn:
Phone:
Email:

PROJECT:

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE MATRIX	GRAB/ COMP.	# CONTAINERS/TYPE	ANALYSES REQUESTED: TOXICITY	REMARKS
#1	9/21/09	1000	W	G	14 1 PLASTIC	X	
					/		
					/		
					/		
					/		
					/		
					/		
					/		

METHOD OF SHIPMENT: FedEx:_____ UPS:_____ HAND:_____ OTHER:_____

COMMENTS:

CODES:

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	PAGE #
	9/21/09	1305		9-21-09	1305	OF
	9-21-09	1800		9/21/09	1800	

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BILL TO: PRECISION ANALYTICAL
321 19TH ST.
BAKERSFIELD, CA 93301
Attn: ACCOUNTS PAYABLE
Phone: 661-323-1682
Email: Shatris@palab-inc.com

PROJECT:

SAMPLE IDENTIFICATION	DATE	TIME	SAMPLE MATRIX	GRAB/ COMP.	# CONTAINERS/TYPE	ANALYSES REQUESTED	REMARKS
INLET TO RES. B	01/11/09	~~8:00~~ 7:30	W	GRAB	20/PLASTIC		#1
* VALLEY WASTE	"	8:40	"	"	4/PLASTIC		#2
OUTLET TO CANAL	"	9:20	"	"	4/PLASTIC		#3
* PRE-POSO CREEK	"	9:55	"	"	4/PLASTIC		#4
SPLITTER BOX	↓	11:00	"	"	2/PLASTIC		#5
* WETLANDS	01/11/09	12:30	↓	↓	2/PLASTIC		#6
					/		
					/		

METHOD OF SHIPMENT: FedEx:_____ UPS:_____ HAND:_____ OTHER: CONTRACT CARRIER

COMMENTS:

CODES:

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	PAGE #
	1/11/09	1350		1-1-10	1355	OF
	1-11-09	1901		1/11/10	1901	

WHITE - RETURN W/ SAMPLE YELLOW - KEEP FOR YOUR RECORDS

Appendix B

Test Data for the Testing of Phase I TIE treatments on the Toxicity of the 9/21/09 "Inlet to Reservoir B" Effluent Sample to *Ceriodaphnia dubia*

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B - Baseline** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SIGN-OFF
Lab Water Control	0	7.87		8.3		202	26.0	0	0	0	0	0	Date: 9/25/09 New WQ: [illegible] Test Init.: 1830 Sol'n Prep: PA Time: PA
	1	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: Time:
	2	7.56	8.05	7.5	8.0	203	25.6	0	0	0	0	0	Date: [illegible] New WQ: PA Counts: [illegible] Sol'n Prep: PA Old WQ: HV Time: 1600
	3	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: Counts: — Sol'n Prep: — Old WQ: — Time:
	4	7.87	7.87	7.1	7.7	233	25.6	6	6	6	4	6	Date: 10/3/09 New WQ: [illegible] Counts: PA Sol'n Prep: PA Old WQ: [illegible] Time: 1385
	5	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: Old WQ: Time:
	6	8.04	8.37	8.2	9.1	231	25.3	X/12	X/12	21	7	19	Date: 10/5/09 New WQ: PA Counts: PA Sol'n Prep: PA Old WQ: [illegible] Time: 1435
	7	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	8	—	7.89	—	8.2	203	25.3	—	—	13	22	15	Date: [illegible] New WQ: — Counts: PA Sol'n Prep: — Old WQ: [illegible] Time: 1175
							Total=	X/18	X/18	40	33	40	Mean Neonates/Female = 29.8

normalized = 37.7

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B - Baseline** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.40		8.3		476		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	7.62	8.32	7.5	8.0	474		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	8.19	8.52	7.2	7.7	492		6	4	5	5	6	
	5	—	—	—	—	—		—	—	—	—	—	
	6	7.60	8.46	9.0	8.8	511		12	17	11	11	X/11	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	8.16	—	7.7	532		23	16	15	12	—	normalized = 34.25
							Total=	41	37	31	28	X/17	Mean Neonates/Female = 30.8

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.12		8.3		758	0	0	0	0	0	22772
	1	—	—	—	—	—	—	—	—	—	—	~~22772~~ — PL
	2	7.53	8.51	7.7	7.9	760	0	0	0	0	0	22772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	8.34	8.63	7.2	7.6	746	2	2	4	4	X/3	22772
	5	—	—	—	—	—	—	—	—	—	—	—
	6	7.28	8.62	9.3	8.6	809	8	11	8	0	—	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	8.47	—	7.8	851	0	—	8	0	—	—
							Total=	10	X/3	12	4	X/3	Mean Neonates/Female = 6.4

normalized = 8.7

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **ph3 Adjusted Effluent** Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SIGN-OFF
Blank	0	7.28		8.6		476		0	0	0	0	0	Date: 9-29 New WQ: AS Test Init: MK Soln Prep: AS Time: 1410
	1	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time:
	2	7.72	7.77	7.5	6.5	496	25.6	0	X/0	X/0	X/0	0	Date: 9/30 New WQ: PA Counts: DM Soln Prep: PA Old WQ: AM Time: 1545
	3	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	4	7.20	7.23	7.4	7.7	482	25.4	6	—	—	—	X/4	Date: 10/1 New WQ: EC Counts: — Soln Prep: EB Old WQ: — Time: 1410
	5	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time:
	6	7.31	7.87	10.0	8.3	495	25.3	8	—	—	—	—	Date: 10/2 New WQ: PA Counts: 1323 Soln Prep: PA Old WQ: AM Time: PA
	7	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time:
	8	—	7.41	—	7.1	625	25.3	15	—	—	—	—	Date: 10/3 New WQ: — Counts: — Soln Prep: — Old WQ: MV Time: 1145
							Total=	29	X/0	X/0	X/0	X/4	Mean Neonates/Female = 1.8 2.04

normalized = 28.0

Pacific EcoRisk — Environmental Consulting and Testing

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: ph3 Adjusted Effluent Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.49		8.7		768		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	7.60	7.79	7.5	6.4	776		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	7.44	7.90	7.5	7.8	787		3	6	4	3	6	
	5	—	—	—	—	—		—	—	—	—	—	
	6	7.23	8.07	9.8	8.4	794		15	17	15	19	19	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	7.95	—	7.7	916		10	16	16	15	20	
							Total=	34	39	37	37	45	Mean Neonates/Female = ~~39.2~~ 38.4

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.51		9.1		1324	0	0	0	0	0	02772
	1	—	—	—	—	—	—	—	—	—	—	—
	2	7.61	7.64	7.7	6.3	1292	0	0	0	0	0	2-2772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	7.57	7.85	7.8	7.7	1333	0	1	0	3	1	22732
	5	—	—	—	—	—	—	—	—	—	—	—
	6	7.07	7.97	9.9	8.3	1368	1	1	0	0	2	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	7.92	—	8.0	1482	0	9	0	0	4	
							Total=	1	11	0	3	7	Mean Neonates/Female = 4.4

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo   Sample ID: ph11 Adjusted Effluent   Test Date: 9/29/09

Project #: 15263   Test ID: 36431   Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E						SIGN-OFF
Blank	0	7.43		8.9		368	25.9	0	0	0	0	0						Date: 9/29/09 New WQ: [illegible] Test Init: [illegible] Sol'n Prep: [illegible] Time: [illegible]
	1	—	—	—	—	—	—	—	—	—	—	—						Date: [illegible] New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	2	8.67	8.29	[illegible]	6.8	426	25.6	0	0	0	0	0						Date: 10/1/09 New WQ: [illegible] Counts: — Sol'n Prep: [illegible] Old WQ: [illegible] Time: 1845
	3	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	4	7.65	8.03	8.4	7.6	377	25.5	4	5	6	5	0						Date: 10/3/09 New WQ: [illegible] Counts: — Sol'n Prep: [illegible] Old WQ: [illegible] Time: 1515
	5	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	6	7.31	8.39	9.5	8.1	677 [illegible]	25.3	9	10	12	18	7						Date: 10/5/09 New WQ: [illegible] Counts: [illegible] Sol'n Prep: [illegible] Old WQ: [illegible] Time: [illegible]
	7	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	8	—	8.60	—	7.3	585	25.3	23	25	13	13	9						Date: [illegible] New WQ: — Counts: [illegible] Sol'n Prep: — Old WQ: [illegible] Time: [illegible]
							Total=	36	40	31	36	16						Mean Neonates/Female = 31.8

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **ph11 Adjusted Effluent** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.79		9.0		876		0	0	0	0	0	
	1	–	–	–	–	–		–	–	–	–	–	
	2	8.07	8.23	[illegible]	6.6	1027		0	0	0	0	0	
	3	–	–	–	–	–		–	–	–	–	–	
	4	7.98	8.18	8.4	7.3	900		4	4	5	1	4	
	5	–	–	–	–	–		–	–	–	–	–	
	6	7.9	8.45	9.3	8.6	1001		22	10	X/9	15	3	
	7	–	–	–	–	–		–	–	–	–	–	
	8	–	8.41	–	7.5	1164		15	17	–	9	10	normalized = 29.75
							Total=	41	31	X/4	25	22	Mean Neonates/Female = 26.6

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.79		9.4		1542	0	0	0	0	0	22772
	1	–	–	–	–	–	–	–	–	–	–	–
	2	7.56	8.32	6.8	6.4	1849	0	0	0	0	0	22772
	3	–	–	–	–	–	–	–	–	–	–	–
	4	7.31	8.27	8.8	7.4	1618	1	2	1	3	2	22772
	5	–	–	–	–	–	–	–	–	–	–	–
	6	7.05	8.51	9.7	8.6	1764	7	0	X/3	7	3	22772
	7	–	–	–	–	–	–	–	–	–	–	–
	8	–	8.38	–	7.5	1977	13	0	–	7	6	–
							Total= 24	2	X/4	17	11	Mean Neonates/Female = 11

normalized = 12.75

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH3 Filtration Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SIGN-OFF
Blank	0	7.49		8.6		527	26.0	0	0	0	0	0	Date: 9-29 New WQ: KB Test Init.: [illegible] Sol'n Prep: NB Time: 1830
	1	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	2	7.68	7.64	7.7	6.8	567	25.6	0	X0	0	0	0	Date: 10/1/09 New WQ: PA Counts: [illegible] Sol'n Prep: PA Old WQ: — Time: [illegible]
	3	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	4	7.30	7.44	7.9	7.6	521	25.4	4	—	4	4	5	Date: 10/3/09 New WQ: [illegible] Counts: [illegible] Sol'n Prep: PA Old WQ: [illegible] Time: 1420
	5	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	6	7.00	7.74	9.8	9.0	593	25.3	9	—	23	20	14	Date: 10/5/09 New WQ: PA Counts: PA Sol'n Prep: PA Old WQ: [illegible] Time: 1730
	7	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	8	—	7.51	—	7.1	596	25.3	8	—	15	11	12	Date: 10/7/09 New WQ: — Counts: [illegible] Sol'n Prep: — Old WQ: NV Time: 1115
							Total=	21	X0	42	35	31	Mean Neonates/Female = 25.8

normalized = 32.25

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH3 Filtration Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.50		8.9		745		0	0	0	0	0	
	1	–	–	–	–	–		–	–	–	–	–	
	2	7.58	7.72	7.5	6.6	761		0	0	0	0	0	
	3	–	–	–	–	–		–	–	–	–	–	
	4	7.54	7.94	7.8	7.4	749		5	6	1	5	5	
	5	–	–	–	–	–		–	–	–	–	–	
	6	7.14	8.15	9.8	8.6	755		10	12	12	12	14	
	7	–	–	–	–	–		–	–	–	–	–	
	8	–	7.56	–	7.0	931		25	15	13	14	16	
							Total=	40	33	26	31	35	Mean Neonates/Female = 32.8

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.51		8.3		1293	0	0	0	0	0	22772
	1	–	–	–	–	–	–	–	–	–	–	–
	2	7.68		7.6		1275	0	0	0	0	0	22772
	3	–	–	–	–	–	–	–	–	–	–	–
	4	7.82	7.94	7.8	7.3	1284	0	3	4	2	2	22772
	5	–	–	–	–	–	–	–	–	–	–	–
	6	8.83	8.14	9.1	8.6	1265	0	9X	X/5	X/6	8	22772
	7	–	–	–	–	–	–	–	–	–	–	–
	8	–	7.95	–	7.7	1714	4	–	–	–	3	
							Total= 4	X/12	X/9	X/8	13	Mean Neonates/Female = 13.2

normalized = 8.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pHi Filtration Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	SIGN-OFF
Blank	0	7.76		8.8		189	26.0	0	0	0	0	0	Date: 9/29/09 New WQ: [illegible] Test Init.: [illegible] Soln Prep: PA Time: [illegible]
	1	—	—	—	—	—	—	-	-	-	-	-	Date: New WQ: Counts: Soln Prep: Old WQ: Time:
	2	7.71	8.22	7.6	8.2	193	25.6	0	0	0	0	0	Date: 10/1/09 New WQ: [illegible] Counts: PA Soln Prep: PA Old WQ: [illegible] Time: 1800
	3	—	—	—	—	—	—	—	—	—	—	—	Date: New WQ: Counts: Soln Prep: Old WQ: Time:
	4	8.08	8.35	7.1	7.6	204	25.6	5	4	4	6	6	Date: 10/3/09 New WQ: PA Counts: [illegible] Soln Prep: PA Old WQ: [illegible] Time: [illegible]
	5	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: Old WQ: — Time:
	6	~~7.67~~ 7.78	8.30	10.3	8.4	~~230~~ 226	25.3	23	21	6	21	~~22~~ 22	Date: 10/5/09 New WQ: PA Counts: PA Soln Prep: PA Old WQ: [illegible] Time: 1633
	7	—	—	—	—	—	~~25.0~~	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: Old WQ: Time:
	8	—	8.43	—	7.2	208	25.3	13	4	13	12	13	Date: 10/7/09 New WQ: — Counts: PA Soln Prep: Old WQ: [illegible] Time: 1145
							Total=	41	29	23	39	41	Mean Neonates/Female = 34.6

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pHi Filtration Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.58		8.9		471		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	7.80	8.33	7.6	8.0	469		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	8.13	8.49	7.4	7.9	484		4	6	6	5	6	
	5	—	—	—	—	—		—	—	—	—	—	
	6	7.77	8.46	10.1	8.4	502 533 PB		8	15	19	16	12	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	8.82	—	7.2	551		29	17	16	17	5	
							Total=	41	38	41	38	23	Mean Neonates/Female = 36.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.46		9.1		766	0	0	0	0	0	22772
	1	—	—	—	—	—	—	—	—	—	—	~~22772~~ — PA
	2	7.90	8.53	7.5	7.8	462	0	0	0	0	0	22772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	8.24	8.68	7.0	7.9	767	3	3	3	2	3	22772
	5	—	—	—	—	—	—	—	—	—	—	—
	6	7.73	8.63	10.1	8.9	799	8	7	X3	12	9	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	8.47	—	7.4	882	6	1	—	1	9	—
							Total=	18	11	X6	15	21	Mean Neonates/Female = 13.8

normalized = 15.75

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH11 Filtration Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E						SIGN-OFF
Blank	0	7.91		9.1		521	25.9	0	0	0	0	0						Date: [illegible] New WQ: [illegible] Test Init.: [illegible] Sol'n Prep: [illegible] Time: [illegible]
	1	—	—	—	—	—	—	-	—	—	—	-						Date: 9/30/09 New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	2	7.92	8.23	7.7	6.7	534	25.4	0	0	0	0	0						Date: 10/1/09 New WQ: [illegible] Counts: [illegible] Sol'n Prep: [illegible] Old WQ: [illegible] Time: 1545
	3	—	—	—	—	—	—	—	—	—	—	—						Date: New WQ: — Counts: Sol'n Prep: — Old WQ: Time:
	4	7.41	8.03	8.4	8.0	630	25.5	5	4	5	3	3						Date: 10/3/09 New WQ: [illegible] Counts: [illegible] Sol'n Prep: [illegible] Old WQ: [illegible] Time: 1605
	5	—	—	—	—	—	—	—	—	—	—	—						Date: New WQ: — Counts: — Sol'n Prep: Old WQ: Time:
	6	7.29	8.28	9.8	8.4	710	25.3	24	8	9	19	13						Date: 10/5/09 New WQ: [illegible] Counts: [illegible] Sol'n Prep: [illegible] Old WQ: [illegible] Time: [illegible]
	7	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: Sol'n Prep: Old WQ: Time:
	8	—	8.37	—	7.8	830	25.3	13	8	4	10	12						Date: 10/7/09 New WQ: — Counts: [illegible] Sol'n Prep: — Old WQ: [illegible] Time: [illegible]
							Total=	42	20	18	32	28						Mean Neonates/Female = 28.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **pH11 Filtration** Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.69		9.2		874		0	0	0	0	0	
	1	–	–	–	–	–		–	–	–	–	–	
	2	7.65	8.35	7.3	6.1	894		0	0	0	0	0	
	3	–	–	–	–	–		–	–	–	–	–	
	4	7.43	8.18	8.0	7.9	886		3	4	4	5	5	
	5	–	–	–	–	–		–	–	–	–	–	
	6	7.10	8.38	9.8	8.5	921		8	10	X/10	17	8	
	7	–	–	–	–	–		–	–	–	–	–	
	8	–	8.30	–	7.8	1079		25	21	–	12	21	normalized = 34.75
							Total=	36	35	X/4	34	34	Mean Neonates/Female = 30.6

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.61		9.4		1508	0	0	0	0	0	22772
	1	–	–	–	–	–	–	–	–	–	–	–
	2	7.56	8.36	7.5	5.6	1547	0	0	0	0	0	22772
	3	–	–	–	–	–	–	–	–	–	–	–
	4	7.26	8.28	8.6	7.6	1477	4	2	3	2	0	22792
	5	–	–	–	–	–	–	–	–	–	–	–
	6	7.11	8.40	9.8	8.6	1553	0	X/0	1	4	4	22799
	7	–	–	–	–	–	–	–	–	–	–	–
	8	–	8.36	–	8.0	1740	0	–	1	0	2	–
							Total=	4	X/2	5	6	4	Mean Neonates/Female = 4.2

normalized = 4.75

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH3 C18SPE Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SIGN-OFF
Blank	0	7.32		9.0		472	26.0	0	0	0	0	0	Date: 9-29 New WQ: KB Test Init: [illegible] Sol'n Prep: KB Time: 1830
	1	–	–	–	–	–	–	–	–	–	–	–	Date: – New WQ: – Counts: – Sol'n Prep: Old WQ: Time: –
	2	7.68	7.81	7.8	6.8	467	25.6	0	0	0	0	0	Date: 10/1/09 New WQ: PA Counts: JW Sol'n Prep: PA Old WQ: [illegible] Time: 845
	3	–	–	–	–	–	–	–	–	–	–	–	Date: – New WQ: – Counts: – Sol'n Prep: Old WQ: Time: –
	4	7.53	7.53	7.8	8.0	444	25.4	4	6	6	5	4	Date: 10/3/09 New WQ: PA Counts: [illegible] Sol'n Prep: PA Old WQ: [illegible] Time: 930
	5	–	–	–	–	–	–	–	–	–	–	–	Date: – New WQ: – Counts: – Sol'n Prep: Old WQ: Time: –
	6	7.21	7.68	9.5	8.5	504	25.3	17	15	12	X/11	X/6	Date: 10/5/09 New WQ: PA Counts: PA Sol'n Prep: PA Old WQ: [illegible] Time: 1730
	7	–	–	–	–	–	–	–	–	–	–	–	Date: – New WQ: – Counts: – Sol'n Prep: – Old WQ: Time: –
	8	–	7.24	–	7.4	603	25.3	10	11	21	–	–	Date: 10/7/09 New WQ: Counts: [illegible] Sol'n Prep: Old WQ: HW Time: 945
							Total=	31	32	39	X/16	X/10	Mean Neonates/Female = 25.6

normalized = 34.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **pH3 C18SPE** Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.29		8.9		744		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	7.48	7.87	7.7	6.5	742		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	7.50	7.88	7.3	7.8	744		4	3	5	5	5	
	5	—	—	—	—	—		—	—	—	—	—	
	6	7.13	7.99	9.8	8.4	740		18	15	20	18	13	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	7.93	—	7.6	811		17	14	17	14	21	
							Total=	39	32	42	37	39	Mean Neonates/Female = 37.8

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.30		9.1		1248	0	0	0	0	0	22772
	1	—	—	—	—	—	—	—	—	—	—	—
	2	7.52	7.89	7.6	6.3	1271	0	0	0	0	0	22772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	7.57	7.78	7.8	7.8	1304	5	3	5	5	3	22772
	5	—	—	—	—	—	—	—	—	—	—	—
	6	7.41	7.80	9.6	8.4	1307	17	8	14	11	12	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	7.64	—	7.1	1432	12	13	10	18	20	
							Total=	34	24	29	34	35	Mean Neonates/Female = 31.2

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pHi C18SPE Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (uS/cm)	Temp (°C)	A	B	C	D	E						SIGN-OFF
Blank	0	7.74		8.9		191	26.0	0	0	0	0	0						Date: 9/29/09 New WQ: Test Init: Soln Prep: Time:
	1	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Soln Prep: — Old WQ: Time:
	2	8.01	8.25	7.8	8.1	193	25.6	0	0	0	0	0						Date: 10/1/09 New WQ: Counts: Soln Prep: Old WQ: Time:
	3	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Soln Prep: — Old WQ: Time:
	4	8.03	8.33	6.8	7.5	201	25.6	4	6	5	5	5						Date: 10/3/09 New WQ: Counts: Soln Prep: Old WQ: Time:
	5	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Soln Prep: Old WQ: Time:
	6	7.72	8.52	10.7	8.9	230	25.3	X/4	X/10	X/15	X/9	X/7						Date: 10/5/09 New WQ: Counts: Soln Prep: Old WQ: Time:
	7	—	—	—	—	—	—	—	—	—	—	—						Date: New WQ: — Counts: — Soln Prep: — Old WQ: Time:
	8	—	—	—	—	—	—	—	—	—	—	—						Date: 10/7/09 New WQ: — Counts: Soln Prep: — Old WQ: Time: 1145
							Total=	X/8	X/16	X/20	X/14	X/12						Mean Neonates/Female = X/14

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **pHi C18SPE** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.70		8.9		468		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	8.00	8.37	7.5	8.1	478		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	8.17	8.40	7.2	7.6	473		6	3	6	3	5	
	5	—	—	—	—	—		—	—	—	—	—	
	6	7.85	8.56	10.3	9.0	542		10	14	25	22	21	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	8.46	—	7.8	581		12	18	17	16	12	
							Total=	28	35	48	41	38	Mean Neonates/Female = 38.0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.63		8.9		757	0	0	0	0	0	22772
	1	—	—	—	—	—	—	—	—	—	—	—
	2	8.03	8.42	7.6	7.7	766	0	0	0	0	0	22772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	8.14	8.53	7.3	7.10	749	5	5	5	6	7	22772
	5	—	—	—	—	—	—	—	—	—	—	—
	6	7.82	8.59	9.9	8.7	819	23	22	20	13	15	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	8.44	—	7.0	854	12	15	11	16	11	—
							Total= 45	42	36	35	33	Mean Neonates/Female = 38.2

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH9 C18SPE Test Date: 9-29-07

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SIGN-OFF
Blank	0	7.23		9.0		259	25.4	0	0	0	0	0	Date: 9/29/07 New WQ: [illegible] Test Init: [illegible] Sol'n Prep: [illegible] Time: [illegible]
	1	-	-	-	-	-	-	-	-	-	-	-	Date: [illegible] New WQ: - Counts: - Sol'n Prep: - Old WQ: - Time: -
	2	7.42	8.25	7.6	6.6	277	25.6	0	0	0	0	0	Date: [illegible] New WQ: [illegible] Counts: [illegible] Sol'n Prep: [illegible] Old WQ: [illegible] Time: [illegible]
	3	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	4	7.07	7.98	8.5	7.7	310	25.5	5	3	4	5	7	Date: 10/3/07 New WQ: [illegible] Counts: [illegible] Sol'n Prep: [illegible] Old WQ: [illegible] Time: 1115
	5	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	6	6.95	8.39	9.7	8.8	347	25.3	22	7	8	12	8	Date: 10/5/07 New WQ: [illegible] Counts: PO Sol'n Prep: PO Old WQ: [illegible] Time: 1045
	7	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	8	—	8.11	—	7.3	421	23.3	18	12	13	11	21	Date: [illegible] New WQ: — Counts: [illegible] Sol'n Prep: — Old WQ: [illegible] Time: [illegible]
							Total=	45	22	25	28	36	Mean Neonates/Female = 31.2

Pacific EcoRisk — Environmental Consulting and Testing

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **pH9 C18SPE** Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.90		8.9		599		0	0	0	0	0	
	1	–	–	–	–	–		–	–	–	–	–	
	2	7.36	8.27	7.8	6.1	627		0	0	0	0	0	
	3	–	–	–	–	–		–	–	–	–	–	
	4	7.34	8.16	8.2	7.5	595		6	3	4	4	6	
	5	–	–	–	–	–		–	–	–	–	–	
	6	6.98	8.46	9.8	8.7	611		25	9	11	24	14	
	7	–	–	–	–	–		–	–	–	–	–	
	8	–	7.09	–	6.8	681		13	17	12	14	13	340 (8)
							Total=	43	29	27	38	33	Mean Neonates/Female = 32.0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.35		9.0		999	0	0	0	0	0	22772
	1	–	–	–	–	–	–	–	–	–	–	–
	2	7.29	8.31	8.1	6.4	1026	0	0	0	0	0	22772
	3	–	–	–	–	–	–	–	–	–	–	–
	4	7.27	8.17	8.3	7.7	1015	26	20	4	4	63	22772
	5	–	–	–	–	–	–	–	–	–	–	–
	6	6.97	8.46	9.5	8.6	1005	19	1	12	8	9	22772
	7	–	–	–	–	–	–	–	–	–	–	–
	8	–	8.18	–	6.6	1130	11	9	8	19	9	–
							Total= 36	10	24	31	21	Mean Neonates/Female = 25.4

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH3 Aeration Test Date: 9-29-07

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E						SIGN-OFF
Blank	0	7.14		8.6		512	26.0	0	0	0	0	0						Date: 9-29-07 New WQ: Test Init: Soln Prep: Time: 1830
	1	–	–	–	–	–	–	–	–	–	–	–						Date: New WQ: – Counts: Soln Prep: – Old WQ: Time:
	2	7.58	8.00	7.9	6.9	504	25.6	0	0	–/0	0	0						Date: New WQ: Counts: Soln Prep: Old WQ: Time:
	3	–	–	–	–	–	–	–	–	–	–	–						Date: New WQ: Counts: Soln Prep: — Old WQ: — Time:
	4	7.20	7.43	7.6	8.0	499	25.4	4	4	–	5	5						Date: New WQ: Counts: Soln Prep: Old WQ: Time: 1455
	5	–	–	–	–	–	–	–	–	–	–	–						Date: – New WQ: Counts: – Soln Prep: Old WQ: – Time:
	6	6.97	7.56	9.5	8.3	510	25.3	23	11	–	18	18						Date: New WQ: Counts: Soln Prep: Old WQ: Time:
	7	–	–	–	–	–	–	–	–	–	–	–						Date: – New WQ: Counts: – Soln Prep: Old WQ: – Time:
	8	–	7.33	–	7.2	594	25.5	14	0	–	7	8						Date: New WQ: Counts: Soln Prep: — Old WQ: Time:
							Total=	41	15	–/0	30	31						Mean Neonates/Female = 23.4

normalized = 29.25

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH3 Aeration Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.64		8.7		728		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	7.52	8.00	7.7	6.6	719		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	7.47	7.66	7.6	7.5	680		5	3	7	4	2	
	5	—	—	—	—	—		—	—	—	—	—	
	6	6.81	7.92	9.9	8.3	801		2	8	20	11	14	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	7.48	—	7.3	965		14	7	8	4	10	
							Total=	40	18	35	19	57	Mean Neonates/Female = 29.8

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.31		9.2		1238		0	0	0	0	0	22772
	1	—	—	—	—	—		—	—	—	—	—	—
	2	7.43	7.99	7.5	6.5	1201		X/0	X/0	X/0	X/0	X/0	22772
	3	—	—	—	—	—		—	—	—	—	—	—
	4	-	-	-	-	-		—	—	—	—	—	22772
	5	—	—	—	—	—		—	—	—	—	—	—
	6	-	-	-	-	-		-	-	-	-	-	22772
	7	-	-	-	-	-		-	-	-	-	-	-
	8	-	-	-	-	-		-	-	-	-	-	—
							Total=	X/0	X/0	X/0	X/0	X/0	Mean Neonates/Female = 0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pHi Aeration Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E						SIGN-OFF
Blank	0	8.25		9.1		230	26.0	0	0	0	0	0						Date: 9/29/09 New WQ: RS Test Init: PA Sol'n Prep: PA Time: 1850
	1	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	2	8.08	8.29	7.6	8.2	231	25.4	0	0	0	0	0						Date: 10/1/09 New WQ: PA Counts: — Sol'n Prep: PA Old WQ: HJ Time: [illegible]
	3	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	4	8.09	8.31	7.0	7.5	240	25.6	4	0	6	4	4						Date: 10/3/09 New WQ: [illegible] Counts: PA Sol'n Prep: PA Old WQ: [illegible] Time: [illegible]
	5	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	6	7.86	8.42	9.9	8.6	254	25.3	12	14	24	22	16						Date: 10/5/09 New WQ: PA Counts: PA Sol'n Prep: PA Old WQ: [illegible] Time: [illegible]
	7	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Sol'n Prep: — Old WQ: — Time: —
	8	—	8.37	—	7.9	264	25.3	0	1	14	11	9						Date: 10/7/09 New WQ: — Counts: PA Sol'n Prep: — Old WQ: [illegible] Time: [illegible]
							Total=	16	15	44	37	29						Mean Neonates/Female = 28.2

Pacific EcoRisk — Environmental Consulting and Testing

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **pHi Aeration** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	8.34		9.1		483		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	8.23	8.31	7.6	7.9	470		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	8.27	8.41	7.9	7.8	490		6	4	4	5	3	
	5	—	—	—	—	—		—	—	—	—	—	
	6	8.09	7.49	9.2	8.9	481		17	18	23	X/2	19	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	8.36	—	7.5	534		10	15	9	13	12	
							Total=	33	37	36	37	34	Mean Neonates/Female = 35.4

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	8.36		9.1		763	0	0	0	0	0	22772
	1	—	—	—	—	—	—	—	—	—	—	—
	2	8.33	8.55	7.5	8.1	760	0	0	0	0	0	22772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	8.24	8.57	7.4	7.0	781	0	2	4	3	0	22772
	5	—	—	—	—	—	—	—	—	—	—	—
	6	8.11	8.63	9.8	8.5	767	9	9	X/0	12	X/2	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	8.44	—	7.2	887	0	0	—	0	—	—
							Total=	9	11	X/0	15	X/2	Mean Neonates/Female = 9.4

normalized = 11.7

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH11 Aeration Test Date: 9-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	SIGN-OFF
Blank	0	8.14		8.7		395	25.9	0	0	0	0	0	Date: [illegible] New WQ: [illegible] Test Init: [illegible] Soln Prep: [illegible] Time: [illegible]
	1	—	—	—	—	—	—	—	—	—	—	—	Date: [illegible] New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	2	7.82	8.49	8.0	6.3	406	25.6	0	0	0	0	0	Date: [illegible] New WQ: [illegible] Counts: — Soln Prep: [illegible] Old WQ: [illegible] Time: [illegible]
	3	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: Old WQ: Time:
	4	7.39	8.16	8.3	7.9	425	25.5	4	0	6	7	4	Date: 10/3/09 New WQ: [illegible] Counts: [illegible] Soln Prep: [illegible] Old WQ: [illegible] Time: 1630
	5	—	—	—	—	—	—	—		—	—	—	Date: — New WQ: — Counts: — Soln Prep: Old WQ: Time:
	6	7.06	8.31	9.9	8.4	515	25.3	4/13	4	8	10	20	Date: 10/5/09 New WQ: [illegible] Counts: [illegible] Soln Prep: [illegible] Old WQ: [illegible] Time: [illegible]
	7	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: Old WQ: Time:
	8	—	8.32	—	6.6	592	25.3	—	11	14	19	13	Date: 10/7/09 New WQ: — Counts: [illegible] Soln Prep: — Old WQ: [illegible] Time: [illegible]
							Total =	X/17	15	28	36	37	Mean Neonates/Female = 26.6

normalized = 29.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH11 Aeration Test Date: 1-29-09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.72		8.4		833		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	7.57	8.25	7.2	6.2	854		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	7.41	8.16	8.1	7.8	844		5	4	5	7	5	
	5	—	—	—	—	—		—	—	—	—	—	
	6	7.02	8.43	9.5	8.3	986		22	8	10	18	11	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	8.09	—	6.7	1141		16	15	18	14	13	
							Total=	43	27	33	39	29	Mean Neonates/Female = 34.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.44		8.5		1485	0	0	0	0	0	22772
	1	—	—	—	—	—	—	—	—	—	—	—
	2	7.59	8.38	7.5	5.9	1500	0	0	R/D	0	0	22772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	7.37	8.34	9.5	8.1	1562	1	0	—	4	0	22772
	5	—	—	—	—	—	—	—	—	—	—	—
	6	7.07	8.51	9.6	8.6	1748	3	2	—	7	3	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	8.13	—	6.8	2498	2	0	—	3	5	—
							Total= 6	2	R/D	14	8	Mean Neonates/Female = 6.0

normalized = 7.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: pH11 Aeration Washdown Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E						SIGN-OFF
Blank	0	7.86		8.0		193	26.0	0	0	0	0	0						Date: 9/29/09 New WQ: PA Test Init.: [illegible] Soln Prep: PA Time: 1?20
	1	—	—	—	—	—	—	—	—	—	—	—						Date: 9/30/09 New WQ: — Counts: — Soln Prep: [illegible] Old WQ: — Time: —
	2	7.82	8.05	8.1	7.1	200	25.6	0	0	0	0	0						Date: 10/1/09 New WQ: PA Counts: [illegible] Soln Prep: PA Old WQ: [illegible] Time: 1?00
	3	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	4	8.16	8.13	9.1	7.5	204	25.4	5	5	3	4	2						Date: 10/?/09 New WQ: EK Counts: [illegible] Soln Prep: PA Old WQ: EK Time: 1345
	5	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Soln Prep: Old WQ: Time:
	6	7.71	8.20	9.3	7.4	195	25.3	18	21	10	21	18						Date: 10/5/09 New WQ: PA Counts: [illegible] Soln Prep: PA Old WQ: BH Time: [illegible]
	7	—	—	—	—	—	—	—	—	—	—	—						Date: — New WQ: — Counts: — Soln Prep: Old WQ: BH Time:
	8	—	8.09	—	6.8	232	25.3	15	16	26	15	16						Date: 10/7/09 New WQ: — Counts: [illegible] Soln Prep: — Old WQ: HV Time: 1145
							Total=	38	42	39	40	36						Mean Neonates/Female = 39.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **pH11 Aeration Washdown** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.94		8.5		211		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	7.92	8.11	8.0	7.1	215		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	8.17	8.11	8.8	7.8	209		5	6	6	5	5	
	5	—	—	—	—	—		—	—	—	—	—	
	6	7.93	8.22	9.3	7.8	209		28	24	20	25	30	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	8.13	—	7.0	215		16	16	19	14	17	
							Total=	49	46	45	44	52	Mean Neonates/Female = 47.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.99		8.8		233	0	0	0	0	0	22772
	1	—	—	—	—	—	—	—	—	—	—	—
	2	8.05	8.14	8.1	7.0	235	0	0	0	0	0	22772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	8.10	8.17	9.4	8.1	249	5	6	5	5	6	22772
	5	—	—	—	—	—	—	—	—	—	—	—
	6	7.94	8.22	9.8	7.5	234	20	27	22	24	21	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	8.17	—	6.5	275	17	18	15	15	15	—
							Total= 42	51	42	44	42	Mean Neonates/Female = 44.2

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **PBO 25 µg/L** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SIGN-OFF
Blank	0	7.92		8.5		189	25.7	0	0	0	0	0	Date: 9/29/09 New WQ: PA Test Init.: SC Soln Prep: PA Old WQ: — Time: 1750
	1	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	2	8.03	8.14	7.6	7.5	197.4	25.5	0	0	0	0	0	Date: 9/30/09 New WQ: PA Counts: — Soln Prep: PA Old WQ: PA Time: 1805
	3	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	4	8.00	8.21	7.6	8.2	250	25.4	4	3	5	5	4	Date: 10/1/09 New WQ: EG Counts: — Soln Prep: PA Old WQ: EG Time: 1450
	5	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	6	7.83	8.34	8.8	9.4	189	25.3	27	19	27	25	20	Date: 10/2/09 New WQ: PA Counts: — Soln Prep: PA Old WQ: EG Time: 1630
	7	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	8	—	7.74	—	7.9	227	25.3	13	17	15	7/0	19	Date: 10/3/09 New WQ: — Counts: — Soln Prep: — Old WQ: — Time: 1645
							Total=	44	39	47	40	43	Mean Neonates/Female = 40.6

normalized = 43.25

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **PBO 25 µg/L** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.22		8.1		475		0	0	0	0	0	
	1	—	—	—	—	—		—	—	—	—	—	
	2	7.82	8.41	7.6	7.5	488		0	0	0	0	0	
	3	—	—	—	—	—		—	—	—	—	—	
	4	7.66	8.38	7.7	8.1	477		3	6	2	3	2	
	5	—	—	—	—	—		—	—	—	—	—	
	6	7.58	8.54	9.2	8.8	478		11	12	24	16	12	
	7	—	—	—	—	—		—	—	—	—	—	
	8	—	8.12	—	6.9	543		24	11	16	14	28	
							Total=	38	29	42	35	42	Mean Neonates/Female = 37.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.02		7.9		763	0	0	0	0	0	22772
	1	—	—	—	—	—	—	—	—	—	—	—
	2	7.65	8.54	7.5	7.7	768	0	0	0	0	0	22772
	3	—	—	—	—	—	—	—	—	—	—	—
	4	7.53	8.51	7.8	7.9	757	1	3	3	3	4	22772
	5	—	—	—	—	—	—	—	—	—	—	—
	6	7.49	8.63	9.3	8.7	778	4	4	7	9	6	22772
	7	—	—	—	—	—	—	—	—	—	—	—
	8	—	8.34	—	7.0	785	0	—	11	0	0	—
							Total= 5	7/2	21	12	12	Mean Neonates/Female = 11.4

normalized = 12.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **PBO 100 µg/L** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SIGN-OFF
Blank	0	7.83		8.9		186	25.4	0	0	0	0	0	Date: 9/29/09 New WQ: FA Test Init: SA Soln Prep: FA Time: 1365
	1	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Times: —
	2	7.88	8.27	7.0	7.9	[illegible]	25.5	0	X/0	0	0	0	Date: 9/30/09 New WQ: FA Counts: — Soln Prep: FA Old WQ: FA Time: 1345
	3	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	4	8.04	8.21	7.5	8.2	185	25.4	3	—	5	6	5	Date: 10/1/09 New WQ: FA Counts: 4 — Soln Prep: FA Old WQ: FA Time: 1500
	5	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	6	7.67	8.41	8.8	8.6	183	25.3	9	—	20	25	22	Date: 10/2/09 New WQ: FA Counts: 4 — Soln Prep: FA Old WQ: FA Time: 1330
	7	—	—	—	—	—	—	—	—	—	—	—	Date: — New WQ: — Counts: — Soln Prep: — Old WQ: — Time: —
	8	—	8.42	—	7.4	220	25.3	17	—	18	16	14	Date: 10/3/09 New WQ: — Counts: 8 — Soln Prep: — Old WQ: FA Time: 1345
							Total=	29	X/0	43	47	41	Mean Neonates/Female = 32.0

normal 2009 = 40.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **PBO 100 µg/L** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.31		8.3		469		0	0	0	0	0	
	1	–	–	–	–	–		–	–	–	–	–	
	2	7.74	8.53	7.1	7.5	496		0	0	0	0	0	
	3	–	–	–	–	–		–	–	–	–	–	
	4	7.71	8.37	7.6	7.0	467		0	0	0	1	1	
	5	–	–	–	–	–		–	–	–	–	–	
	6	7.64	8.48	8.7	8.6	467		0	0	11	0	0	
	7	–	–	–	–	–		–	–	–	–	–	
	8	–	8.29	–	6.7	527		0	0	2	X/16	0	normalized = 35
							Total=	0	0	13	X/16	1	Mean Neonates/Female = 6.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.09		8.1		754	0	0	0	0	0	22772
	1	–	–	–	–	–	–	–	–	–	–	–
	2	7.60	8.54	7.2	7.8	755	0	0	0	0	0	22772
	3	–	–	–	–	–	–	–	–	–	–	–
	4	7.56	8.51	7.6	7.4	746	0	0	0	0	0	22772
	5	–	–	–	–	–	–	–	–	–	–	–
	6	7.42	8.62	8.7	8.6	763	0	0	0	0	0	22772
	7	–	–	–	–	–	–	–	–	–	–	–
	8	–	8.41	–	6.9	857	X/0	0	0	0	0	–
							Total= X/0	0	0	0	0	Mean Neonates/Female = 0

normalized = 0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Humic Acid - 20 mg/L** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

Blank

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	SAMPLE ID
0	7.95		8.1		202	25.9	0	0	0	0	0	Date: 9/29/09 New WQ: PA Test Init: Br; Soln Prep: PA Time: 1750
1	—	—	—	—	—		—	—	—	—	—	Date: — New WQ: — Counts: —; Soln Prep: Old WQ: Time:
2	7.86	9.24	7.8	7.9	175		0	0	0	0	0	Date: 10/1/09 New WQ: PA Counts: ~; Soln Prep: PA Old WQ: [illegible] Time: [illegible]
3	—	—	—	—	—		—	—	—	—	—	Date: — New WQ: Counts: —; Soln Prep: Old WQ: — Time:
4	7.90	8.69	8.4	7.9	198		6	5	2	2	1	Date: [illegible] New WQ: [illegible] Counts: —; Soln Prep: [illegible] Old WQ: [illegible] Time: 1510
5	—	—	—	—	—		—	—	—	—	—	Date: — New WQ: — Counts:; Soln Prep: Old WQ: Time:
6	7.65	8.36	9.0	8.6	200		x/12	x/19	17	16	27	Date: 10/5/09 New WQ: PA Counts: [illegible]; Soln Prep: [illegible] Old WQ: [illegible] Time: [illegible]
7	—	—	—	—	—		—	—	—	—	—	Date: New WQ: — Counts: —; Soln Prep: — Old WQ: Time:
8	—	8.36	—	7.1	250		22	—	8	18	14	Date: [illegible] New WQ: — Counts: Br; Soln Prep: — Old WQ: [illegible] Time: 1115
						Total=	39	x/24	27	36	42	Mean Neonates/Female = 33.6 (normalized = 36.0)

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		A	B	C	D	E	SAMPLE ID
0	7.04		8.2		767		0	0	0	0	0	22772
1	—	—	—	—	—		—	—	—	—	—	—
2	7.75	8.52	7.7	7.7	777		0	0	0	0	0	22772
3	—	—	—	—	—		—	—	—	—	—	—
4	7.99	8.51	8.6	7.7	743		1	5	4	3	1	22772
5	—	—	—	—	—		—	—	—	—	—	—
6	~~7.84~~ 7.89	8.64	9.0	8.6	772		10	x/6	10	x/15	10	22772
7	—	—	—	—	—		—	—	—	—	—	—
8	—	7.37	—	7.1	869		[illegible]	—	8	—	9	—
						Total=	~~33~~ 29	x/11	22	x/18	20	Mean Neonates/Female = 20.0

normalized = 23.7

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Humic Acid - 40 mg/L** Test Date: 9/29/09

Project #: 15263 Test ID: 36431 Control / Diluent: Lab Water

Blank

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	SAMPLE ID
0	8.05		8.6		196		0	0	0	0	0	Date: 9/29/09 New WQ: PA Test Init: [illegible] Sol'n Prep: PA Time: 1250
1	—	—	—	—	—		—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: Old WQ: Time:
2	7.92	8.15	7.7	7.5	212		X/0	0	0	X/0	0	Date: 10/1/09 New WQ: PA Counts: [illegible] Sol'n Prep: PA Old WQ: [illegible] Time: 1805
3	—	—	—	—	—		—	—	—	—	—	Date: — New WQ: Counts: — Sol'n Prep: — Old WQ: — Time: —
4	8.03	8.11	7.7	7.9	190		—	5	[illegible]	—	3	Date: 10/3/09 New WQ: KR Counts: [illegible] Sol'n Prep: KR Old WQ: KR Time: 1518
5	—	—	—	—	—		—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: Old WQ: Time:
6	7.81	8.31	9.6	8.5	195		—	11	10	—	15	Date: 10/5/09 New WQ: PA Counts: [illegible] Sol'n Prep: PA Old WQ: [illegible] Time: 1630
7	—	—	—	—	—		—	—	—	—	—	Date: — New WQ: — Counts: — Sol'n Prep: Old WQ: Time: —
8	—	7.33	—	7.0	228		—	16	11	—	15	Date: 10/7/09 New WQ: — Counts: [illegible] Sol'n Prep: — Old WQ: [illegible] Time: 1415
						Total=	X/0	32	23	X/0	33	Mean Neonates/Female = 17.6 (normalized = 29.3)

100%

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		A	B	C	D	E	SAMPLE ID
0	7.18		8.1		773		0	0	0	0	0	22792
1	—	—	—	—	—		—	—	—	—	—	—
2	7.77	8.51	7.7	7.5	777		0	0	0	0	0	22792
3	—	—	—	—	—		—	—	—	—	—	—
4	8.02	8.52	8.3	7.9	799		5	4	4	3	7	22792
5	—	—	—	—	—		—	—	—	—	—	—
6	8.04	8.62	10.2	8.4	781		12	12	X/12	X/3	14	22792
7	—	—	—	—	—		—	—	—	—	—	—
8	—	7.89	—	7.0	883		19	0	—	—	14	—
						Total=	36	16	X/16	X/6	35	Mean Neonates/Female = 21.8

normalized = 29.0

Appendix C

Test Data for the Testing of Phase I TIE treatments on the Toxicity of the 9/21/09 "Inlet to Reservoir B" Effluent Sample to Fathead Minnows

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: Baseline #1

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Lab Water Control	25.9	8.27		7.4		370	10	10	Date 9/25/09
50%	25.9	7.43		7.5		580	10	10	Test Solution Prep AB
100%	25.9	6.85		6.4		783	10	10	New WQ AB
									Initiation Time 1650
									Initiation Signoff JPL
									Sample ID 22772
Meter ID	22A	pH03		DO14		EC03			
Lab Water Control	25.7	—	8.10	—	7.6	374	10	10	Date 9/26/09
50%	25.7	—	8.24	—	7.3	583	10	10	Test Solution Prep JPL —
100%	25.7	—	8.40	—	6.5	789	8	9	New WQ —
									Renewal Time 1030
									Renewal Signoff JPL
									Old WQ [illegible]
Meter ID	22A	—	pH03	—	DO13	EC03			
Lab Water Control	24.0	8.00	8.01	8.2	7.5	306	10	10	Date 9/27/09
50%	24.0	7.24	8.29	8.5	8.1	532	10	10	Test Solution Prep PA
100%	24.0	7.02	8.97	8.9	8.5	787	8	8	New WQ PA
									Renewal Time 1040
									Renewal Signoff PA
									Old WQ PA
Meter ID	22A	pH03	pH 09	DO14	DO13	EC05			
Lab Water Control	26.0	—	8.50	—	7.7	357	10	10	Date 9-28-09
50%	26.0	—	8.24	—	7.3	572	9	9	Test Solution Prep —
100%	26.0	—	8.34	—	6.5	816	3	4	New WQ —
									Renewal Time 0930
									Renewal Signoff AB
									Old WQ SL
Meter ID	22A	—	pH09	—	DO14	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: Baseline #1

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Lab Water Control	25.9	8.13	7.82	8.5	7.4	306	8	10			Date 9/29/09
50%	25.9	7.12	8.15	8.4	7.6	553	9	8			Test Solution Prep JR
100%	25.9	6.83	8.39	8.1	7.6	779	2	1			New WQ JR
											Renewal Time 1700
											Renewal Signoff BVR
											Old WQ MB
Meter ID	22A	PH03	PH14	DO14	DO12	EC03					
Lab Water Control	25.7	—	8.58	—	7.7	374	8	10			Date 9/30/09
50%	25.7	—	8.30	—	7.4	595	7	8			Test Solution Prep —
100%	25.7	—	8.25	—	7.3	848	0	0			New WQ —
											Renewal Time 1630
											Renewal Signoff
											Old WQ
Meter ID	22A	—	PH09	—	DO14	EC05					
Lab Water Control	25.6	7.54	7.92	7.3	6.9	320	8	10			Date 10/1/09
50%	25.6	7.36	8.14	7.5	6.9	528	5	7			Test Solution Prep PA
100%	—	—	—	—	—	—	—	—			New WQ PA
											Renewal Time 1600
											Renewal Signoff
											Old WQ DD
Meter ID	32A	PH09	PH09	DO12	DO12	EC04					
Lab Water Control	25.6		8.16		7.1	409	8	10			Date 10/2/09
50%	25.6		8.20		6.9	867	5	7			Termination Time 1100
100%	—		—		—	—	—	—			Termination Signoff
											Old WQ BA
Meter ID	32A		PH12		DO14	EC04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/27/09 Sign-off: BH

Test Date: 9/25/09 Final Weight Date: 10/7/09 Sign-off: DEP

Treatment: Baseline #1

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Control	A	169.20	171.47	10	0.227
2		B	169.91	171.00 ~~X~~	10	~~X~~ 0.259
3	50%	A	149.10	150.08	10	0.098
4		B	139.61	140.90	10	0.129
5	100%	A	169.01	169.05	10	0.004
6		B	136.39		10	
QA1			154.52	154.64		0.012
Balance ID:			1DA1	1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30/09 Randomization: —

Organism Log#: 4798 Age: <48h
Organism Supplier: Enviro Sci
Control/Diluent: EPAMH
Control Water Batch: 1248
Treatment: Baseline #2

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.7	8.21		8.5		313	10	10	Date: 9/30/09
50%	25.7	7.62		8.6		542	10	10	Test Solution Prep: PA
100%	25.7	7.32		8.4		782	10	10	New WQ: PA
									Initiation Time: 1630
									Initiation Signoff: PA
									Sample ID: 22732
Meter ID	22A	pH4		DO3		EC04			
Blank	25.6		7.94		7.7	340	10	10	Date: 10/1/09
50%	25.6		8.27		7.6	554	10	10	Count Time: 1045
100%	25.6		8.46		7.7	793	10	10	Count Signoff: JR
									Old WQ: EQ
Meter ID	22A		pH03		DO13	EC03			
Blank	25.7	7.98	7.87	7.7	7.8	349	10	10	Date: 10/2/09
50%	25.7	7.30	8.15	8.0	7.1	577	10	10	Test Solution Prep: KD
100%	25.7	7.07	8.37	8.3	7.5	793	10	9	New WQ: EAE
									Renewal Time: 1815
									Renewal Signoff:
									Old WQ: JL
Meter ID	22A	pH03	pH07	DO12	DO	EC03			
Blank	25.6		7.66		7.6	337	9	10	Date: 10/3/09
50%	25.6		8.16		7.5	641	10	10	Count Time: 1020
100%	25.6		8.38		7.9	809	10	9	Count Signoff: JPL
									Old WQ: JPL
Meter ID	22A		pH03		DO12	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30-05 Randomization: —

Organism Log#: 4798 Age: <48h
Organism Supplier: Enviro Sci.
Control/Diluent: EPAMH
Control Water Batch: 1248
Treatment: Baseline #2

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	8.11	7.65	7.9	7.6	372	9	10			Date: 10/4/09
50%	25.4	7.87	8.05	7.7	7.2	560	9	10			Test Solution Prep: PA
100%	25.4	7.77	8.37	7.9	7.3	800	5	5			New WQ: BM
								5			Renewal Time: 1625
											Renewal Signoff: RA
											Old WQ: SM
Meter ID	27A	pH12	pH12	DO14	DO14	EC03					
Blank	25.3		7.84		8.0	370	9	10			Date: 10/5/09
50%	25.3		8.19		7.3	526	9	9			Count Time: 1345
100%	25.3		8.44		7.2	928	4	4			Count Signoff: JM
											Old WQ: BH
Meter ID	27A	pH12	pH12		DO13	EC03					
Blank	25.6	7.95	7.82	7.8	8.2	340	9	10			Date: 10/6/09
50%	25.6	7.50	7.96	8.6	7.4	542	7	7			Test Solution Prep: PA
100%	25.4	7.28	8.22	9.0	7.0	771	3	1			New WQ: KR
											Renewal Time: 1400
											Renewal Signoff: PA
											Old WQ: SM
Meter ID	27A	pH12	pH09	DO13	DO14	EC05					
Blank	25.3		7.68		7.6	343	9	10			Date: 10/7/09
50%	25.3		7.70		6.9	567	4	6			Termination Time: 1015
100%	25.3		8.05		6.8	807	1	0			Termination Signoff: SM
											Old WQ: KRM
Meter ID	27A		pH03		DO12	EC10					

pH Meter DO Meter EC Meter

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36461 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 10/6/09 Sign-off: DED

Test Date: 9/30/09 Final Weight Date: 10/11/09 Sign-off: KR

Treatment: Baseline #2

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	164.84	167.55	10	0.271
2		B	174.23	177.05	10	0.282
3	50%	A	161.01	161.95	10	~~0.085~~ 0.094
4		B	161.91	163.66	10	0.175
5	100%	A	153.34	153.40	10	0.006
6		B	169.07	–	10	–
QA1			170.76	170.66		0.1
Balance ID:			#1	1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical** Organism Log#: 4798 Age: <48h

Test Material: Inlet to Res B Organism Supplier: Enviro Sc

Test ID#: 36461 Project #: 15239 Control/Diluent: EPAMH

Test Date: 9/30/09 Randomization: — Control Water Batch: 124

Treatment: pH 3

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.7	7.76		8.8		518	10	10	Date: 9/30/09
50%	25.7	7.45		8.7		822	10	10	Test Solution Prep: PA
100%	25.7	7.28		8.6		1307	10	10	New WQ: PA
									Initiation Time: 1630
									Initiation Signoff: PA
									Sample ID: [illegible]
Meter ID	22A	pH19		DO13		EC04			
Blank	25.6		7.97		7.6	533	10	10	Date: 10/1/09
50%	25.6		8.12		7.8	818	10	10	Count Time: 1045
100%	25.6		8.23		7.7	1320	7	10	Count Signoff: JRW
									Old WQ: EL
Meter ID	22A		pH03		DO13	EC04			
Blank	25.7	7.20	8.02	8.9	7.5	547	10	10	Date: 10/2/09
50%	25.7	7.22	7.89	8.4	7.4	850	10	10	Test Solution Prep: KD
100%	25.7	7.10	8.04	9.0	7.6	1307	6	9	New WQ: [illegible]
									Renewal Time: 1815
									Renewal Signoff: [illegible]
									Old WQ: JL
Meter ID	22A	pH03	pH03	DO13	DO13	EC03			
Blank	25.6		7.72		7.4	582	10	9	Date: 10/3/09
50%	25.6		8.02		7.7	985	10	10	Count Time: 1020
100%	25.6		8.22		8.0	1328	5	5	Count Signoff: [illegible]
									Old WQ: KD
Meter ID	22A		pH03		DO12	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30a/09 Randomization: —

Organism Log#: 4798 Age: <48h
Organism Supplier: EnviroSci
Control/Diluent: EPAMH
Control Water Batch: 1248
Treatment: pH 3

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	7.32	7.94	8.0	7.3	506	9	8			Date: 9/30 10/1/09
50%	25.4	7.75	7.99	8.0	7.5	840	9	10			Test Solution Prep: PQ
100%	25.4	7.77	8.17	8.0	7.3	1310	4	4			New WQ: EMC
											Renewal Time: 1425 1625
											Renewal Signoff: PA
											Old WQ: SQ
Meter ID	22A	pH 12	pH12	DO 14	DO14	EC03					
Blank	25.3		7.76		7.1	504	9	8			Date: 10/5/09
50%	25.3		7.89		7.3	814	8	10			Count Time: 1345
100%	25.3		8.20		7.2	1349	3	4			Count Signoff: JM
											Old WQ: BH
Meter ID	n/a		pH 12		DO13	EC03					
Blank	25.0	7.46	7.94	9.2	8.2	502	9	8			Date: 10/6/09
50%	25.6	7.33	7.71	8.7	7.9	819	8	10			Test Solution Prep: PA
100%	25.6	7.19	7.85	9.0	7.4	1313	0	0			New WQ: KQ
											Renewal Time: 1400
											Renewal Signoff: PA
											Old WQ: SM
Meter ID	22A	pH2	pH09	DO13	DO14	EC05					
Blank	25.3		8.15		7.6	537	9	8			Date: 10/7/09
50%	25.3		7.94		7.3	852	7	9			Termination Time: 1015
100%	—		—		—	—	—	—			Termination Signoff: SM
											Old WQ: PMPA
Meter ID	22A		pH14		DO14	EC03					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36461 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 10/6/09 Sign-off: DETP

Test Date: 9/30/09 Final Weight Date: 10/11/09 Sign-off: KR

Treatment: pH 3

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	169.10	172.26	10	PA 116 0316
2		B	178.82	181.63	10	0.28
3	50%	A	153.19	154.74	10	0.155
4		B	154.37	156.18	10	0.181
5	100%	A	176.03	–	–	–
6		B	531[illegible]	–	–	–
QA1			163.35	163.27		0.08
Balance ID:			#1	1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30/09 Randomization: —

Organism Log#: 4798 Age: <48h
Organism Supplier: Enviro Sci
Control/Diluent: EPAMH
Control Water Batch: 1248
Treatment: pH 11

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.7	7.32		8.9		674	10	10	Date: 9/30/09
50%	25.7	7.92		8.8		972	10	10	Test Solution Prep: PA
100%	25.7	7.01		9.0		1619	10	10	New WQ: PA
									Initiation Time: 1630
									Initiation Signoff: PA
									Sample ID: 22732
Meter ID	22A	PH14		DO13		EC04			
Blank	25.6		7.92		7.6	690	10	10	Date: 10/1/09
50%	25.6		8.07		7.6	984	10	10	Count Time: 1045
100%	25.6		8.23		7.6	1650	9	8	Count Signoff: JW
									Old WQ: SQ
Meter ID	22A		PH03		DO13	EC03			
Blank	25.7	7.10	7.95	9.1	7.1	741	10	10	Date: 10/2/09
50%	25.7	7.14	7.87	8.9	7.1	1010	10	10	Test Solution Prep: KO
100%	25.7	7.01	8.09	9.0	7.4	1619	9	7	New WQ: BK
									Renewal Time: 1815
									Renewal Signoff:
									Old WQ: JZ
Meter ID	22A	PH03	PH03	DO13	DO13	EC03			
Blank	25.6		7.73		7.8	726	10	10	Date: 10/3/09
50%	25.6		8.07		7.4	1027	9	9	Count Time: 1020
100%	25.6		8.22		7.7	1654	8	2	Count Signoff: JW
									Old WQ: KQ
Meter ID	22A		pH03		DO12	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30/09 Randomization: —

Organism Log#: 4798 Age: <48h
Organism Supplier: Envir Sci.
Control/Diluent: EPAMH
Control Water Batch: 1248
Treatment: pH 11

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	#Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	7.66	7.73	8.1	7.3	696	9	9			Date: 10/4/09
50%	25.4	7.70	7.96	7.9	7.2	941	8	9			Test Solution Prep: PQ
100%	25.4	7.62	8.18	8.1	7.1	1607	4	2			New WQ: BWL
											Renewal Time: 1625
											Renewal Signoff: PQ
											Old WQ: SH
Meter ID	22A	pH12	pH12	DO14	DO14	EC03					
Blank	25.1		7.91		7.2	743	9	9			Date: 10/5/09
50%	25.1		7.98		7.1	989	8	9			Count Time: 1345
100%	25.1		8.26		7.4	1691	2	2			Count Signoff: JAW
											Old WQ: BH
Meter ID	22A		pH12		DO3	EC03					
Blank	25.6	7.7	7.59	9.0	7.4	689	9	9			Date: 10/6/09
50%	25.6	7.36	7.64	8.5	7.3	968	8	9			Test Solution Prep: PA
100%	25.6	8.26	7.91	8.9	7.1	1607	1	1			New WQ: EG
											Renewal Time: 1400
											Renewal Signoff: PA
											Old WQ: BW
Meter ID	22A	pH12	pH09	DO13	DO4	EC05					
Blank	25.3		7.51		7.1	721	9	9			Date: 10/7/09
50%	25.3		7.00		7.0	1024	6	7			Termination Time: 1015
100%	25.3		7.93		6.0	1647	0	0			Termination Signoff: BW
											Old WQ: MM
Meter ID	22A		pH14		DO14	EC03					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36461 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 10/6/09 Sign-off: DEP

Test Date: 9/30/09 Final Weight Date: 10/11/09 Sign-off: KR

Treatment: pH 11

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	156.34	159.61	10	~~0.39~~ 0.327
2		B	151.89	155.00	10	0.311
3	50%	A	154.20	156.68	10	0.248
4		B	~~154.48~~ 151.20	152.65	10	0.145
5	100%	A	156.67	~	+10 ?	=
6		B	154.27	~	10	=
QA1			168.67	168.61		0.06
Balance ID:			#1	1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30/09 Randomization: —

Organism Log#: 4798 Age: <48h
Organism Supplier: Enviro Sc.
Control/Diluent: M EPAMH
Control Water Batch: 1293
Treatment: pH 3 Filtration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.7	7.71		8.6		520	10	10	Date: 9/30/09
50%	25.7	7.40		8.6		959	10	10	Test Solution Prep: PA
100%	25.7	7.18		8.8		1619	10	10	New WQ: PA
									Initiation Time: 1630
									Initiation Signoff: PA
									Sample ID: 22772
Meter ID	32A	PH14		DO13		EC04			
Blank	25.6		7.76		7.7	532	10	10	Date: 10/1/09
50%	25.6		8.09		7.6	968	10	10	Count Time: 1045
100%	25.6		8.27		7.5	1638	10	9	Count Signoff: JDW
									Old WQ: EQ
Meter ID	32A	—	PH03	—	DO13	EC13			
Blank	25.7	7.20	7.66	9.0	7.4	560	10	10	Date: 10/2/09
50%	25.7	7.22	7.89	8.7	7.6	869	10	9	Test Solution Prep: KO
100%	25.7	7.05	8.14	8.9	7.4	1360	9	7	New WQ: EMK
									Renewal Time: 1815
									Renewal Signoff:
									Old WQ: JZ
Meter ID	32A	PH03	PH03	DO13	DO13	EC03			
Blank	25.6		7.74 ~~8.16~~ PA		7.8 ~~8.0~~ KO	696 ~~1500~~ KO	10	9	Date: 10/3/09
50%	25.6		8.18		7.7	953	10	9	Count Time: 1020
100%	25.6		~~8.16~~ 7.74 KO		~~7.7~~ 7.75 KO	~~696~~ 1307 PA	9	6	Count Signoff:
									Old WQ: KO
Meter ID	32A		PH03		DO12	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30/09 Randomization: —

Organism Log#: 4798 Age: <48h
Organism Supplier: Enviro Sci
Control/Diluent: EPAMH
Control Water Batch: 1248
Treatment: pH 3 Filtration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Blank	25.4	7.84	8.13	7.9	7.4	545	8/10	9			Date: 10/4/09
50%	25.4	7.74	8.01	8.2	7.4	853	10	9			Test Solution Prep PA
100%	25.4	7.60	7.82	8.0	7.3	1375	9	5			New WQ EKK
											Renewal Time 1625
											Renewal Signoff PA
											Old WQ SM
Meter ID	22A	pH12	PH12	DO14	DO14	EC03					
Blank	25.3		7.74		7.2	698	10	9			Date 10/5/09
50%	25.3		7.92		7.2	904	10	9			Count Time 1345
100%	25.3		8.12		7.3	1292	9	5			Count Signoff DA
											Old WQ BH
Meter ID	22A		PH12		DO13	EC03					
Blank	25.6	8.16	7.67	8.2	7.9	501	10	9			Date 10/6/09
50%	25.6	7.30	7.63	8.7	7.5	825	10	9			Test Solution Prep PA
100%	25.6	7.18	7.74	9.0	7.4	1350	7	4			New WQ KG
											Renewal Time 1400
											Renewal Signoff PA
											Old WQ
Meter ID	22A	pH12	pH09	DO13	DO14	EC05					
Blank	25.3		7.91		7.1	573	10	9			Date 10/7/09
50%	25.3		7.85		7.4	864	9	9			Termination Time 1015
100%	25.3		7.89		7.1	1344	7	4			Termination Signoff
											Old WQ
Meter ID	22A		pH12		DO14	EC03					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36461 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 10/6/09 Sign-off: DED

Test Date: 9/30/09 Final Weight Date: 10/11/09 Sign-off: KR

Treatment: pH 3 Filtration

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	162.31	165.13	10	~~0.280~~ 0.282
2		B	154.68	157.83	10	0.315
3	50%	A	174.32	176.86	10	0.254
4		B	174.21	176.84	10	0.263
5	100%	A	172.16	174.16	10	0.200
6		B	159.66	160.75	10	0.109
QA1			173.59	173.59		0.0
Balance ID:			#1	1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pHi Filtration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.9	8.21		7.0		368	10	10	Date 9/25/09
50%	25.9	7.49		7.1		577	10	10	Test Solution Prep AB
100%	25.9	7.21		7.1		785	10	10	New WQ AB
									Initiation Time 1650
									Initiation Signoff JPC
									Sample ID 22772
Meter ID	22A	PH03		DO14		EC03			
Blank	25.7	—	8.12	—	6.1	373	10	10	Date 9/26/09
50%	25.7	—	8.28	—	7.1	570	10	10	Test Solution Prep —
100%	25.7	—	8.49	—	6.9	782	7	10	New WQ —
									Renewal Time 1030
									Renewal Signoff JPC
									Old WQ
Meter ID	22A	—	PH03	—	DO13	EC03			
Blank	26.0	7.82	8.13	9.6	8.2	370	10	10	Date 9/27/09
50%	26.0	7.41	8.29	9.5	8.3	557	10	10	Test Solution Prep PA
100%	26.0	7.25	8.98	9.4	9.2	783	7	10	New WQ PA
									Renewal Time 1040
									Renewal Signoff PA
									Old WQ BH
Meter ID	22A	PH03	PH09	DO14	DO13	EC05			
Blank	26.0	—	8.49	—	7.9	383	10	10	Date 9-28-09
50%	26.0	—	8.22	—	7.1	582	8	9	Test Solution Prep —
100%	26.0	—	8.54	—	6.3	815	3	8	New WQ —
									Renewal Time 0930
									Renewal Signoff AB
									Old WQ SL
Meter ID	22A	—	PH09	—	DO14	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: c48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pHi Filtration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Blank	25.9	7.64	8.02	10.1	7.7	370	10	10			Date 9/29/09
50%	25.9	7.42	8.13	10.5	7.7	~~580~~ JR 544	5	4			Test Solution Prep JR
100%	25.9	7.21	8.35	10.5	7.6	787	1	3			New WQ JR
											Renewal Time 1700
											Renewal Signoff SVR
											Old WQ KB
Meter ID	22A	PH03	PH14	DO14	DO12	EC03					
Blank	25.7	—	8.29	—	7.1	406	8	10			Date 9/30/09
50%	25.7	—	8.16	—	7.1	616	5	4			Test Solution Prep —
100%	25.7	—	8.25	—	6.8	946	1	1			New WQ —
											Renewal Time 1630
											Renewal Signoff
											Old WQ
Meter ID	22A	—	PH09	—	DO14	EC05					
Blank	25.6	~~7.58~~	~~8.20~~	7.9	6.9	358	8	10			Date 10/1/09
50%	25.6	7.56	8.20	7.8	6.9	546	5	4			Test Solution Prep PA
100%	25.6	7.57	8.41	8.2	6.9	769	0	0			New WQ PA
											Renewal Time 1600
											Renewal Signoff
											Old WQ DD
Meter ID	22A	PH09	PH01	DO12	DO12	EC04					
Blank	25.6		8.31		7.3	399	8	10			Date 10/2/09
50%	25.6		8.33		7.0	527	5	4			Termination Time 1100
100%	—		—		—	—	—	—			Termination Signoff
											Old WQ RM
Meter ID	22A		PH12		DO19	EC04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/27/09 Sign-off: —

Test Date: 9/28/09 Final Weight Date: 10/7/09 Sign-off: DED

Treatment: pHi Filtration

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	181.98	183.41	10	0.201
2		B	~~BT 150.51~~ 150.93	154.23	10	~~0.290~~ 0.380 RV
3	50%	A	159.29	160.71	10	~~0.104~~ 0.142 RV
4		B	199.12	150.39	10	0.127
5	100%	A	~~BT 178.37~~ 178.32	—	10	—
6		B	175.20	—	10	—
QA1			150.91	150.91		0
Balance ID:			ID #1			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30/09 Randomization: —

Organism Log#: 4798 Age: <48h
Organism Supplier: Enviro Sci
Control/Diluent: EPAMH
Control Water Batch: 12 [illegible]
Treatment: pH 11 Filtration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.7	7.24		8.7		493	10	10	Date: 9/30/09
50%	25.7	7.20		8.8		942	10	10	Test Solution Prep: PA
100%	25.7	7.00		9.0		1598	10	10	New WQ: PA
									Initiation Time: 1630
									Initiation Signoff: PA
									Sample ID: 22772
Meter ID	22A	pH14		DO13		EC04			
Blank	25.6		7.93		7.1	524	10	10	Date: 10/1/09
50%	25.6		8.14		7.4	973	10	10	Count Time: 1045
100%	25.6		8.23		7.3	1619	8	9	Count Signoff: JOW
									Old WQ: [illegible]
Meter ID	22A		pH03	DO13	DO13	EC03			
Blank	25.7	7.06	7.92	9.0	7.2	550	8	10	Date: 10/2/09
50%	25.7	7.06	7.90	8.8	7.4	1022	10	10	Test Solution Prep: KO
100%	25.7	6.95	8.14	9.0	7.2	1646	8	9	New WQ: EWL
									Renewal Time: 1815
									Renewal Signoff: [illegible]
									Old WQ: JL
Meter ID	22A	pH03	pH03	DO13	DO13	EC03			
Blank	25.6		7.85		7.5	575	8	10	Date: 10/3/09
50%	25.6		8.10		7.7	1065	10	10	Count Time: 1020
100%	25.6		8.32		7.8	1764	4	6	Count Signoff: JA
									Old WQ: [illegible]
Meter ID	22A		pH03		DO12	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36461 Project #: 15239
Test Date: 9/30/09 Randomization: —

Organism Log#: 4798 Age: C48h
Organism Supplier: Enviro Sci
Control/Diluent: EPAMH
Control Water Batch: 1248
Treatment: pH 11 Filtration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Blank	25.4	7.66	7.76	7.9	7.1	524	8	10			Date: 10/4/09
50%	25.4	7.61	7.94	7.7	7.1	1009 494 PA	10	10			Test Solution Prep: PA
100%	25.4	7.57	8.23	8.0	7.2	1283 1284 PA	3	3			New WQ: EML
											Renewal Time: 1625
											Renewal Signoff: PA
											Old WQ: SM
Meter ID	22A	pH13	pH12	DO14	DO14	EC03					
Blank	25.3		8.06		7.3	570	8	10			Date: 10/5/09
50%	25.3		7.99		7.2	1061	10	10			Count Time: 1345
100%	25.3		8.23		7.3	1736	1	2			Count Signoff: JM
											Old WQ: BH
Meter ID	22A		pH12		DO13	EC03					
Blank	25.6	8.25	7.66	8.7	7.7	525	8	10			Date: 10/6/09
50%	25.6	7.44	7.67	8.4	7.4	1040	9 10 AM	9 10 PM			Test Solution Prep: PA
100%	25.6	8.26	7.91	8.8	7.0	1755	0	0			New WQ: KA
											Renewal Time: 1400
											Renewal Signoff: PA
											Old WQ: SM
Meter ID	22A	pH12	pH09	DO13	DO14	EC05					
Blank	25.3		8.00		6.9	584	8	10			Date: 10/7/09
50%	25.3		7.90		7.0	1080	10	8			Termination Time: 1015
100%	25.3		—		—	—	—	—			Termination Signoff: SM
											Old WQ: KDA
Meter ID	22A		pH14		DO14	EC03					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36461 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 10/6/09 Sign-off: DEO

Test Date: 9/30/09 Final Weight Date: 10/11/09 Sign-off: KR

Treatment: pH 11 Filtration

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	137.17	139.27	10	0.210
2		B	156.30	159.34	10	0.304
3	50%	A	173.42	175.88	10	0.246
4		B	166.20	168.71	10	~~0.510~~ 0.251
5	100%	A	171.17	KR ~~177~~ —	10	—
6		B	160.76	—	10	—
QA1			151.49	151.39		0.1
Balance ID:			#1	1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: 24 hr
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pH3 C18 SPE

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.6	6.87		7.8		528	10	10	Date 9/25/09
50%	25.6	7.45		7.9		837	10	10	Test Solution Prep SM/AB
100%	25.6	7.21		8.3		1304	10	10	New WQ AB
									Initiation Time 1815
									Initiation Signoff SM
									Sample ID 28772
Meter ID	22A	PH03		DO13		*EC04			
Blank	26.0	—	7.63	—	7.2	548	9	10	Date 9/26/09
50%	26.0	—	7.85	—	7.9	883	10	10	Test Solution Prep —
100%	26.0	—	7.74	—	~~7.9~~ 7.9	1366	10	10	New WQ —
									Renewal Time 1140
									Renewal Signoff JPL
									Old WQ
Meter ID	22A	—	PH03	—	DO13	EC03			
Blank	25.9	6.84	7.90	9.6	7.6	538	9	10	Date 9.27.09
50%	25.9	6.75	7.59	9.4	7.5	934	9/10	10	Test Solution Prep EKL
100%	25.9	6.74	7.54	9.4	7.1	1333	10	10	New WQ EKL
									Renewal Time 1400
									Renewal Signoff
									Old WQ
Meter ID	22A	pH 11	PH09	DO14	DO13	EC04			
Blank	26.0	—	7.57	—	6.0	571	9	10	Date 9-28-09
50%	26.0	—	7.49	—	7.1	1150	9	10	Test Solution Prep —
100%	26.0	—	7.49	—	7.2	1397	10	10	New WQ —
									Renewal Time 1000
									Renewal Signoff AB
									Old WQ BH
Meter ID	22A	—	PH 14	—	DO12	EC03			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48 hr
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pH3 C18 SPE

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Blank	25.9	7.80	8.10	9.0	7.8	552	9	10			Date 9/25/09
50%	25.9	7.69	7.66	8.6	7.5	808	9	9			Test Solution Prep JR
100%	25.9	7.59	7.55	8.7	7.3	1317	9	10			New WQ HV
											Renewal Time 1715
											Renewal Signoff
											Old WQ
Meter ID	22A	pH 14	pH09	DO 12	DO13	Ec 04					
Blank	25.7	—	8.19	—	7.3	606	9	10			Date 9/30/09
50%	25.7	—	7.90	—	7.0	888	9	9			Test Solution Prep —
100%	25.7	—	7.70	—	6.6	1394	9	10			New WQ —
											Renewal Time 1700
											Renewal Signoff
											Old WQ
Meter ID	22A	—	pH09	—	DO14	Ec 05					
Blank	25.6	7.62	8.02	7.6	6.4	529	8	10			Date 10/1/09
50%	25.6	7.44	7.70	7.8	6.6	814	9	9			Test Solution Prep PA
100%	25.6	7.31	7.60	7.9	6.4	1311	9	9			New WQ PQ
											Renewal Time 1530
											Renewal Signoff
											Old WQ DD
Meter ID	22A	pH09	DO12	DO12	pH09	Ec04					
Blank	25.6		7.91		6.0	575	8	9			Date 10/2/09
50%	25.6		7.67		6.4	855	9	9			Termination Time 1100
100%	25.6		7.57		6.2	1377	9	9			Termination Signoff
											Old WQ BA
Meter ID			pH 12		DO 14	EC04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/30/09 Sign-off: BH

Test Date: 9/25/09 Final Weight Date: 10/7/09 Sign-off: DED

Treatment: pH3 C18 SPE

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	181.21	183.34	10	0.213
2		B	163.18	165.97	10	0.279
3	50%	A	181.151	183.77	10	0.262
4		B	172.13	174.55	10	0.242
5	100%	A	166.45	168.71	10	0.226
6		B	180.92	183.31	10	0.239
QA1			168.85	168.84		0.01
Balance ID:			ID # 1	1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pHi C18 SPE

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.8	7.73		7.5		363	10	10	Date 9/25/09
50%	25.8	7.69		7.9		562	10	10	Test Solution Prep AB
100%	25.8	7.53		8.0		767	10	10	New WQ AB
									Initiation Time 1750
									Initiation Signoff JPC
									Sample ID 22772
Meter ID	22A	pH03		DO13		EC04			
Blank	25.7	—	8.09	—	6.0	371	10	10	Date 9/26/09
50%	25.7	—	8.33	—	7.5	575	10	10	Test Solution Prep —
100%	25.7	—	8.42	—	7.5	784	10	10	New WQ —
									Renewal Time 1030
									Renewal Signoff JPC
									Old WQ
Meter ID	22A	—	pH03	—	DO13	EC03			
Blank	26.0	7.96	8.12	9.8	7.9	371	10	10	Date 9/27/09
50%	26.0	8.01	8.16	9.8	7.6	556	10	10	Test Solution Prep PA
100%	26.0	7.84	8.95	9.6	7.7	798	10	10	New WQ PA
									Renewal Time 1040
									Renewal Signoff PA
									Old WQ
Meter ID	22A	pH03	pH09	DO14	DO18	EC05			
Blank	26.0	—	8.35	—	6.8	401	10	10	Date 9-28-09
50%	26.0	—	8.14	—	6.5	570	10	10	Test Solution Prep —
100%	26.0	—	8.28	—	6.2	823	10	10	New WQ —
									Renewal Time 0936
									Renewal Signoff AB
									Old WQ SL
Meter ID	22A	—	pH09	—	DO14	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: –

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pHi C18 SPE

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.9	7.64	7.90	10.6	6.7	367	10	10			Date 9/29/09
50%	25.9	7.64	8.09	11.2	7.0	580 5/16 JL	10	10			Test Solution Prep JL
100%	25.9	7.40	8.34	10.3	7.1	794	9	10			New WQ JL
											Renewal Time 1700
											Renewal Signoff BA
											Old WQ AB
Meter ID	22A	PH03	PH14	DO4	DO12	EC03					
Blank	25.7	–	8.24	–	5.8	447	10	10			Date 9/30/09
50%	25.7	–	8.01	–	6.2	613	10	10			Test Solution Prep
100%	25.7	–	8.00	–	6.4	847	8	10			New WQ –
											Renewal Time 1630
											Renewal Signoff
											Old WQ
Meter ID	22A	–	PH09	–	DO14	EC05					
Blank	25.6	7.84	7.95	7.6	7.1	357	10	9			Date 10/1/09
50%	25.6	7.75	8.06	7.6	6.5	548	10	10			Test Solution Prep PA
100%	25.6	7.66	8.33	7.8	6.4	775	8	10			New WQ PA
											Renewal Time 1600
											Renewal Signoff
											Old WQ DD
Meter ID	22A	PH09	PH09	DO12	DO12	EC04					
Blank	25.6		8.23		6.8	893	10	9			Date 10/2/09
50%	25.6		8.25		6.4	864	10	10			Termination Time 1100
100%	25.6		8.41		6.7	954	8	10			Termination Signoff
											Old WQ BA
Meter ID	22A		PH12		DO12	EC04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/27/09 Sign-off: BH

Test Date: 9/25/09 Final Weight Date: 10/7/09 Sign-off: DED

Treatment: pHi C18 SPE

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	163.62	166.65	10	0.242 1.303
2		B	BH 177. 176.97	180.08	10	0.311
3	50%	A	161.71	164.88	10	0.317
4		B	176.99	179.27	10	0.283
5	100%	A	182.96	185.55	10	0.259
6		B	186.95	189.51	10	0.306
QA1			183.15	183.22		0.07
Balance ID:			ID # 1	1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: 24-48hr
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 9 1245
Treatment: pH 7 C18 SPE XB

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.8	6.96		8.1		397	10	10	Date 9/25/09
50%	25.8	7.25		7.6		692	10	10	Test Solution Prep XB
100%	25.8	7.05		8.1		1013	10	10	New WQ AB
									Initiation Time 1820
									Initiation Signoff KO
									Sample ID 22772
Meter ID	22A	pH03		DO13		EC04			
Blank	25.9	—	7.76	—	7.0	425	10	10	Date 9/26/09
50%	25.9	—	8.17	—	7.8	712	10	10	Test Solution Prep —
100%	25.9	—	8.23	—	7.5	1030	9	10	New WQ —
									Renewal Time 1115
									Renewal Signoff JBC
									Old WQ
Meter ID	22A	—	pH03	—	DO13	EC03			
Blank	25.4	6.86	7.88	9.8	7.6	419	10	10	Date 9.27.09
50%	25.9	6.84	7.86	9.7	6.8	736	10	10	Test Solution Prep EM
100%	25.9	6.85	8.19	9.7	7.1	1025	9	10	New WQ EM
									Renewal Time 1250
									Renewal Signoff PH
									Old WQ
Meter ID	22A	pH 11	pH09	DO14	DO13	EC04			
Blank	26.0	—	7.97	—	6.4	437	10	10	Date 9-28-09
50%	26.0	—	7.88	—	6.6	737	10	10	Test Solution Prep —
100%	26.0	—	7.85	—	6.3	1049	9	10	New WQ —
									Renewal Time 1100
									Renewal Signoff AB
									Old WQ
Meter ID	22A	—	pH 14	—	DO12	EC03			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9-25-09 Randomization: —

Organism Log#: 4789 Age: 24hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 9 1245
Treatment: pH11 C18 SPE

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Blank	26.0	7.80	8.00	9.2	7.5	428	9	9			Date 9/27/09
50%	26.0	7.74	7.86	8.9	7.2	659	10	10			Test Solution Prep JL
100%	26.0	7.65	8.07	9.0	7.1	1015	9	8			New WQ HV
											Renewal Time 1730
											Renewal Signoff CH
											Old WQ BR
Meter ID	22A	pH 14	pH09	DO 12	DO12	Ec 04					
Blank	25.9	—	8.14	—	7.0	447	8	9			Date 9/30/09
50%	25.9	—	7.87	—	6.3	733	10	10			Test Solution Prep —
100%	25.9	—	7.87	—	6.4	1093	9	8			New WQ —
											Renewal Time 1700
											Renewal Signoff JL
											Old WQ
Meter ID	22A	—	pH09	—	DO14	EC05					
Blank	25.4	7.82	7.86	10.0	6.8	451	8	9			Date 10/1/09
50%	25.4	7.19	8.04	9.6	6.8	685	10	10			Test Solution Prep
100%	25.4	7.04	8.08	9.7	6.1	1032	9	8			New WQ
											Renewal Time 1240
											Renewal Signoff
											Old WQ DED
Meter ID	22A	pH 09	pH09	DO12	DO12	EC05					
Blank	25.6		5.7 EC6		5.9 766	743	8	9			Date 10/2/09
50%	25.6		7.93 6 hr		6.1	713	10	9			Termination Time 1100
100%	25.6		8.07		5.7	1068	9	8			Termination Signoff
											Old WQ KQ
Meter ID	22A		pH14		DO14	EC04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/28/09 Sign-off: DCD

Test Date: 9/25/09 Final Weight Date: 10/7/09 Sign-off: DZP

Treatment: pH adj C18 SPE

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	172.85	175.00	10	0.215
2		B	159.67	161.98	10	~~0.130~~ 0.231
3	50%	A	145.10	147.90	10	0.280
4		B	160.55	162.82	10	0.227
5	100%	A	167.40	~~170.~~ 169.93	10	0.253
6		B	172.62	174.92	10	0.230
QA1			168.38	168.41		0.03
Balance ID:			#1	#1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48 hr
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pH3 Aeration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.6	7.35		8.2		586	10	10	Date 9/25/09
50%	25.6	7.59		8.3		809	10	10	Test Solution Prep Sm/AB
100%	25.4	7.24		8.3		1232	10	10	New WQ AB
									Initiation Time 1815
									Initiation Signoff Sm
									Sample ID 22772
Meter ID	22A	pH03		DO13		EC04			
Blank	26.0	—	7.64	—	7.5	602	10	10	Date 9/26/09
50%	26.0	—	7.72	—	~~8.2~~ 8.3	811	10	10	Test Solution Prep —
100%	26.0	—	7.45	—	7.2	1257	0	0	New WQ —
									Renewal Time 1140
									Renewal Signoff JPC
									Old WQ
Meter ID	22A	—	pH03	—	DO13	EC03			
Blank	25.9	6.84	7.03	8.6	7.2	656	10	9	Date 9.27.09
50%	25.9	6.86	7.73	8.8	8.1	960	10	10	Test Solution Prep EKK
100%	—	—	—	—	—	—	—	—	New WQ EKK
									Renewal Time 1400
									Renewal Signoff JPC
									Old WQ
Meter ID	22A	pH11	pH09	DO14	DO13	EC04			
Blank	26.0	—	7.47	—	7.3	656	10	7	Date 9-28-09
50%	26.0	—	7.34	—	6.5	920	10	10	Test Solution Prep ~~AB~~
100%	—	—	—	—	—	—	—	—	New WQ —
									Renewal Time 1020
									Renewal Signoff AB
									Old WQ
Meter ID	22A	—	pH11A	—	DO12	EC03			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: 48 hr
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pH3 Aeration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Blank	25.9	7.70	7.76	8.3	7.5	614	10	7			Date 9/29/09
50%	25.9	7.59	7.56	8.5	7.4	778	7	5			Test Solution Prep JL
100%	—	—	—	—	—	—	—	—			New WQ HV
											Renewal Time 1715
											Renewal Signoff
											Old WQ
Meter ID	22A	pH 14	pH09	DO12	DO13	EC 04					
Blank	25.7	—	7.88	—	6.7	675	9	7			Date 9/30/09
50%	25.7	—	7.68	—	7.1	902	7	5			Test Solution Prep —
100%	—	—	—	—	—	—	—	—			New WQ —
											Renewal Time 1700
											Renewal Signoff
											Old WQ
Meter ID	22A	—	pH09	—	DO14	EC05					
Blank	25.6	7.59	7.71	6.8	6.5	596	9	7			Date 10/1/09
50%	25.6	7.41	7.52	7.3	6.7	780	7	5			Test Solution Prep TA
100%	—	—	—	—	—	—	—	—			New WQ PA
											Renewal Time 1530
											Renewal Signoff
											Old WQ DED
Meter ID	22A	pH09	DO12	DO12	pH09	EC04					
Blank	25.6		7.61		6.5	639	9	7			Date 10/2/09
50%	25.6		7.45		6.8	824	0 X	1			Termination Time 1120
100%	—		—		—	—	—	—			Termination Signoff
											Old WQ BH
Meter ID	22A		pH 12		DO14	EC 04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/28/09 Sign-off: DED

Test Date: 9/25/09 Final Weight Date: 10/7/09 Sign-off: DED

Treatment: pH3 Aeration

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	167.80	171.03	10	0.323
2		B	161.20	163.47	10	0.227
3	50%	A	180.36	—	10	—
4		B	176.80	179.06	10	0.026
5	100%	A	179.32	—	10	—
6		B	166.79	—	10	—
QA1			159.27	159.18		0.09
Balance ID:			#1	#1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pHi Aeration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.9	8.20		7.0		367	10	10	Date 9/25/09
50%	25.9	8.10		7.3		578	10	10	Test Solution Prep AB
100%	25.9	8.09		7.4		783	10	10	New WQ AB
									Initiation Time 1650
									Initiation Signoff JR
									Sample ID 22772
Meter ID	22A	pH03		D014		EC05			
Blank	25.7	—	8.14	—	7.3	374	10	10	Date 9/26/09
50%	25.7	—	8.36	—	7.6	570	10	10	Test Solution Prep —
100%	25.7	—	8.50	—	7.8	773	10	10	New WQ —
									Renewal Time 1030
									Renewal Signoff JR
									Old WQ SL
Meter ID	22A	—	pH03	—	D013	EC03			
Blank	26.0	7.88	8.26	9.9	9.6	373	10	10	Date 9/27/09
50%	26.0	7.59	8.31	9.6	9.5	550	10	10	Test Solution Prep PA
100%	26.0	7.44	NM	9.4	NM	798	9	10	New WQ PA
									Renewal Time 1040
									Renewal Signoff PA
									Old WQ BH
Meter ID	22A	pH03	pH09	D014	D013	EC05			
Blank	26.0	—	8.40	—	7.4	385	10	10	Date 9-28-09
50%	26.0	—	8.20	—	6.9	569	10	10	Test Solution Prep —
100%	26.0	—	8.35	—	6.4	794	3	2	New WQ —
									Renewal Time 0930
									Renewal Signoff AB
									Old WQ SL
Meter ID	22A	—	pH09	—	D014	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pHi Aeration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Blank	25.9	7.81	7.91	10.5	7.5	372	10	10			Date 9/29/09
50%	25.9	8.01	8.24	11.0	7.4	~~597~~ 550	6	10			Test Solution Prep JR
100%	25.9	7.99	8.44	10.7	7.3	788	1	0			New WQ JR
											Renewal Time 1700
											Renewal Signoff SVT
											Old WQ MD
Meter ID	22B	PH09	pH14	DO14	DO1V	EC03					
Blank	25.7	—	8.27	—	7.3	465	10	10			Date 9/30/09
50%	25.7	—	8.14	—	7.3	597	4	7			Test Solution Prep —
100%	25.7	—	8.15	—	7.4	843	0	—			New WQ —
											Renewal Time 1630
											Renewal Signoff
											Old WQ
Meter ID	22A	—	pH09	—	DO14	EC05					
Blank	25.6	7.96	7.97	8.1	7.4	365	10	10			Date 10/1/09
50%	25.6	7.91	8.21	8.0	6.8	550	3	6			Test Solution Prep PA
100%	—	—	—	—	—	—	—	—			New WQ PA
											Renewal Time 1600
											Renewal Signoff
											Old WQ JP
Meter ID	22A	PH09	pH09	DO12	DO12	EC04					
Blank	25.6		8.23		6.7	394	10	10			Date 10/2/09
50%	25.6		8.33		6.9	567	2	6			Termination Time 1400
100%	—		—		—	—	—	—			Termination Signoff
											Old WQ BH
Meter ID	22A		pH12		DO14	EC04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/28/09 Sign-off: DED

Test Date: 9/26/09 Final Weight Date: 10/7/09 Sign-off: DED

Treatment: pHi Aeration

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	196.41	159.37	10	0.296
2		B	163.86	166.81	10	0.295
3	50%	A	173.31	173.64	10	0.033
4		B	157.60	158.90	10	0.130
5	100%	A	177.12	—	10	—
6		B	179.00	—	10	—
QA1			175.71	175.63		0.8
Balance ID:			#1	#1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: ✓

Organism Log#: 4789 Age: < 48 hr
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pH11 Aeration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.8	7.69		8.3		620	10	10	Date 9/25/09
50%	25.8	7.40		8.1		979	10	10	Test Solution Prep AB
100%	25.8	7.15		8.1		1581	10	10	New WQ AB
									Initiation Time 1820
									Initiation Signoff KO
									Sample ID 22772
Meter ID	22A	PH03		DO13		EC04			
Blank	25.9	—	7.92	—	6.8	649	10	10	Date 9/26/09
50%	25.9	—	8.27	—	6.9	991	10	10	Test Solution Prep —
100%	25.9	—	8.38	—	6.6	1603	9	10	New WQ —
									Renewal Time 1115
									Renewal Signoff JPL
									Old WQ
Meter ID	22A	—	PH03	—	DO13	EC03			
Blank	25.9	6.78	7.84	9.0	8.1	662	10	10	Date 9.27.09
50%	25.9	6.84	8.19	8.8	8.1	1131	10	10	Test Solution Prep EKK
100%	25.9	6.92	8.38	9.1	8.4	1585	9	8	New WQ EKK
									Renewal Time 1250
									Renewal Signoff PA
									Old WQ
Meter ID	22A	pH 11	PH09	DO14	DO13	EC04			
Blank	26.0	—	7.66	—	7.2	717	10	9	Date 9-28-09
50%	26.0	—	7.90	—	7.3	1175	7	6	Test Solution Prep —
100%	26.0	—	8.22	—	7.8	1650	1	4	New WQ —
									Renewal Time 1100
									Renewal Signoff AB
									Old WQ BH
Meter ID	22A	—	pH 11	—	DO12	EC03			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: –

Organism Log#: 4789 Age: 48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pH11 Aeration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
Blank	26.0	7.63	8.03	9.5	6.8	501	7	9			Date 9/29/09
50%	26.0	7.69	7.89	8.8	6.9	965	6	6			Test Solution Prep JL
100%	26.0	7.71	8.21	9.0	7.1	1587	0	0			New WQ HV
											Renewal Time 1730
											Renewal Signoff SH
											Old WQ
Meter ID	22A	pH 14	pH09	DO 12	DO13	EC 04					
Blank	25.9	–	8.15	–	6.8	647	7	9			Date 9/30/09
50%	25.9	–	8.05	–	7.1	1163	4	5			Test Solution Prep –
100%	–	–	–	–	–	–	–	–			New WQ –
											Renewal Time 1700
											Renewal Signoff JL
											Old WQ
Meter ID	22A	–	pH09	–	DO14	EC05					
Blank	25.4	7.85	7.95	8.6	6.9	488	7	9			Date 10/1/09
50%	25.4	7.09	8.9	8.9	6.9	965	4	5			Test Solution Prep EKK
100%	–	–	–	–	–	–	–	–			New WQ EKK
											Renewal Time 1240
											Renewal Signoff
											Old WQ DED
Meter ID	22A	pH09	pH09	DO 12	DO12	EC05					
Blank	25.6		7.81		6.6	488	7	9			Date 10/2/09
50%	25.6		8.07		6.7	1027	2	5			Termination Time 1100
100%	–		–		–	–	–	–			Termination Signoff
											Old WQ KQ
Meter ID	22A		pH 14		DO14	EC 04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/28/09 Sign-off: DED

Test Date: 9/25/09 Final Weight Date: 10/7/09 Sign-off: DED

Treatment: pH11 Aeration

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	171.84	174.04	10	0.220
2		B	179.98	182.11	10	0.213
3	50%	A	177.84	178.14	10	0.030
4		B	165.41	166.41	10	0.100
5	100%	A	165.69	–	10	–
6		B	166.08	–	10	–
QA1			165.46	165.51		0.05
Balance ID:			#1	#1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48 hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pH11 Aeration Washdown

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
Blank	25.9	8.16		7.6		361	10	10	Date: 9/25/09
50%	25.9	8.31		8.0		361	10	10	Test Solution Prep: AB
100%	25.9 22A JR	8.45		8.0		368	10	10	New WQ: AB
									Initiation Time: 1450
									Initiation Signoff: JPC
									Sample ID: 22772
Meter ID	22A	pH03		DO13		EC04			
Blank	25.7	—	8.13	—	7.6	374	10	10	Date: 9/26/09
50%	25.7	—	8.11	—	7.7	374	10	10	Test Solution Prep: —
100%	25.7	—	8.13	—	7.3	379	10	10	New WQ: —
									Renewal Time: 1030
									Renewal Signoff: JR
									Old WQ: EL
Meter ID	22A	—	pH03	—	DO13	EC03			
Blank	26.0	8.28 9.8	8.09	7.99	8.3	373	10	10	Date: 9/27/09
50%	26.0	8.15	8.02	9.7	8.8	345	10	10	Test Solution Prep: PA
100%	26.0	8.28	7.97	10.0	8.5	385	10	10	New WQ: PA
									Renewal Time: 1040
									Renewal Signoff: PA
									Old WQ: BH
Meter ID	22A	pH03	pH04	DO14	DO13	EC05			
Blank	26.0	—	8.50	—	6.7	400	9	10	Date: 9-28-09
50%	26.0	—	8.33	—	6.9	376	10	10	Test Solution Prep: —
100%	26.0	—	8.22	—	7.1	392	10	10	New WQ: —
									Renewal Time: 0930
									Renewal Signoff: AB
									Old WQ: SL
Meter ID	22A	—	pH04	—	DO14	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: –

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: pH11 Aeration Washdown

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.9	~~8.17~~ 7.95	7.92	8.8	7.4	308	9	10			Date: 9/29/09
50%	25.9	8.20	7.84	8.8	7.2	344	10	10			Test Solution Prep: JR
100%	25.9	8.28	7.89	9.3	7.3	377	10	10			New WQ: JR
											Renewal Time: 1700
											Renewal Signoff:
											Old WQ:
Meter ID	22A	PH03	DH14	DO14	DO12	EC03					
Blank	25.7	–	8.49	–	7.4	384	9	10			Date: 9/30/09
50%	25.7	–	8.29	–	6.9	390	10	10			Test Solution Prep:
100%	25.7	–	8.10	–	7.0	427	10	9			New WQ: –
											Renewal Time: 1630
											Renewal Signoff:
											Old WQ:
Meter ID	22A	–	PH09	–	DO14	EC05					
Blank	25.6	6.92	7.92	8.5	6.7	334	9	10			Date: 10/1/09
50%	25.6	7.23	7.87	9.0	6.7	356	10	10			Test Solution Prep:
100%	25.6	6.91	7.90	9.6	6.7	388	10	9			New WQ:
											Renewal Time: 1600
											Renewal Signoff:
											Old WQ: DEB
Meter ID	22A	pH 09	PH09	DO12	DO12	EC 04					
Blank	25.6		8.090		6.5	355	8	7			Date: 10/2/09
50%	25.6		7.90		6.6	373	10	10			Termination Time: 1100
100%	25.6		7.96		7.0	419	*	9			Termination Signoff:
											Old WQ: BH
Meter ID	22A		pH 12		DO14	EC04					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239

Sample: Inlet to Res B Tare Weight Date: 9/28/09 Sign-off: DED

Test Date: 9/25/09 Final Weight Date: 10/7/09 Sign-off: DED

Treatment: pH11 Aeration Washdown

Pan ID	Treatment	Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	Blank	A	166.91	169.54	10	0.263
2		B	169.14	171.64	10	0.250
3	50%	A	170.66	173.69	10	0.303
4		B	159.55	162.60	10	0.305
5	100%	A	159.77	162.91	10	0.314
6		B	166.39	169.03	10	0.264
QA1			172.09	172.13		
Balance ID:			#1	#1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: Humic Acid

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	SIGN-OFF
20 mg/L Blank	25.8	8.25		8.2		363	10	10	Date: 9/25/09
40 mg/L Blank	25.8	8.26		8.8		368	10	10	Test Solution Prep: AB
20 mg/L 100%	25.8	7.49		8.3		770	10	10	New WQ: AB
40 mg/L 100%	25.8	7.53		8.3		784	10	10	Initiation Time: 1750
									Initiation Signoff: JA
									Sample ID: 22772
Meter ID	22A	pH03		DO13		EC04			
20 mg/L Blank	25.7	—	8.12	—	7.3	376	10	10	Date: 9/26/09
40 mg/L Blank	25.7	—	8.10	—	7.3	374	10	10	Test Solution Prep: —
20 mg/L 100%	25.7	—	8.47	—	7.5	793	9	10	New WQ: —
40 mg/L 100%	25.7	—	8.49	—	7.2	781	9	10	Renewal Time: 1030
									Renewal Signoff: JA
									Old WQ: EQ
Meter ID	22A	—	pH03	—	DO13	EC03			
20 mg/L Blank	26.0	8.00	8.00	10.2	8.0	380	10	10	Date: 9/27/09
40 mg/L Blank	26.0	8.02	8.00	10.3	8.2	382	10	10	Test Solution Prep: PA
20 mg/L 100%	26.0	7.75	8.47	10.2	7.8	806	8	10	New WQ: PA
40 mg/L 100%	26.0	7.73	8.51	10.5	7.8	809	9	10	Renewal Time: 1040
									Renewal Signoff: PA
									Old WQ: BL
Meter ID	22A		pH09		DO 13				
20 mg/L Blank	24.0	—	8.40	—	6.8	415	10	10	Date: 9-28-09
40 mg/L Blank	26.0	—	8.37	—	6.6	387	8	8	Test Solution Prep:
20 mg/L 100%	26.0	—	8.32	—	6.8	831	4	9	New WQ: —
40 mg/L 100%	26.0	—	8.27	—	6.6	821	6	6	Renewal Time: 0930
									Renewal Signoff: AB
									Old WQ: SL
Meter ID	22A	—	pH09	—	DO14	EC04			

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 9/25/09 Randomization: —

Organism Log#: 4789 Age: <4/8dys
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1245
Treatment: Humic Acid

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	# Live Organisms D	SIGN-OFF
20 mg/L Blank	25.9	8.03	7.87	11.1	7.6	379	10	9			Date: 9/29/09
40 mg/L Blank	25.9	8.04	7.88	11.2	7.5	379	6	8			Test Solution Prep: JR
20 mg/L 100%	25.9	8.15	8.39	11.2	7.1	797	0	1			New WQ: JR
40 mg/L 100%	25.7	8.13	8.43	11.1	7.3	800	1	3			Renewal Time: 1700
											Renewal Signoff: SH
											Old WQ: AB
Meter ID	22A	PH03	PH04	DO14	DO12	CC03					
20 mg/L Blank	25.7	—	8.06	—	7.3	428	10	9			Date: 9/30/09
40 mg/L Blank	25.7	—	8.04	—	6.9	426	6	8			Test Solution Prep: —
20 mg/L 100%	25.7	—	8.17	—	6.9	874	—	1			New WQ: —
40 mg/L 100%	25.7	—	8.28	—	6.8	881	1	2			Renewal Time: 1630
											Renewal Signoff:
											Old WQ:
Meter ID	22A	—	PH09	—	DO14	EC05					
20 mg/L Blank	25.6	8.05	7.91	8.0	6.8	372	10	9			Date: 10/1/09
40 mg/L Blank	25.6	8.11	7.93	8.0	6.5	779	6	8			Test Solution Prep: PA
20 mg/L 100%	25.6	8.37	8.39	8.2	6.3	383	—	1			New WQ: PA
40 mg/L 100%	25.6	~~8.25~~ 8.25 PA	8.41	8.3	6.8	773	0	1			Renewal Time: 1600
											Renewal Signoff:
											Old WQ: DD
Meter ID	22A	PH09	PH09	DO12	DO12	EC04					
20 mg/L Blank	25.6		8.01		7.0	402	10	9			Date: 10/2/09
40 mg/L Blank	25.6		8.02		6.7	387	6	8			Termination Time: 1100
20 mg/L 100%	25.6		8.42		6.7	386	—	1			Termination Signoff:
40 mg/L 100%	25.6		8.55		6.7	824	—	1			Old WQ: RH
Meter ID	22A		PH17		DO14	EC0F					

Fathead Minnow Dry Weight Data Sheet

Client: **Precision Analytical** Test ID #: 36426 Project # 15239
Sample: Inlet to Res B Tare Weight Date: 9/28/09 Sign-off: DED
Test Date: 9-25-09 Final Weight Date: 10/7/09 Sign-off: DED
Treatment: Humic Acid

Pan ID	Treatment Replicate	Initial Pan Weight (mg)	Final Pan Weight (mg)	Initial # of Organisms	Biomass Value (mg)
1	20 mg/L Blank A	164.24	167.28	10	0.304
2	B	164.64	167.45	10	0.281
3	40 mg/L Blank A	162.38	164.81	10	0.243
4	B	163.91	166.67	10	0.277
5	20 mg/L 100% A	167.23	—	10	—
6	B	144.08	~~144.77~~ 144.17	10	0.009
7	40 mg/L 100% A	151.09	—	10	—
8	B	153.19	153.48	10	~~0.290~~ 0.029 g
QA1		167.71	167.75		0.04
Balance ID:		#1	#1		

Appendix D

Test Data for the Testing of Phase I TIE treatments on the Toxicity of the 1/11/10 "Inlet to Reservoir B" Effluent Sample to Fathead Minnows

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37837 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5034 Age: <48hrs
Organism Supplier: ENVIRO
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: Baseline

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C		SIGN-OFF
Lab Water Control	~~25.0~~ 25.3 JZ	7.80		8.8		313	5	5	5		Date 2.3.10
50%	25.0	7.60		9.0		564	5	5	5		Test Solution Prep XB
100%	25.0	6.79		9.9		811	5	5	5		New WQ EMK
											Initiation Time 1800
											Initiation Signoff JZ
											Sample ID 93374
Meter ID	33A	pH 11		RDO3		EC05					
Lab Water Control	25.0	8.11	8.02	7.4	7.6	327	5	5	5		Date 2-4-10
50%	25.0	7.14	8.30	7.9	7.3	557	5	5	5		Test Solution Prep JZ
100%	25.0	6.82	8.56	9.0	7.3	804	5	5	5		New WQ DJ
											Renewal Time 1145
											Renewal Signoff JR
											Old WQ MO
Meter ID	33A	pH14	pH09	RDO3	RDO2	EC04					
Lab Water Control	25.1	7.75	7.92	8.7	8.5	276	5	5	5		Date 2/5/10
50%	25.1	7.31	7.97	8.4	7.6	550	5	5	5		Test Solution Prep AA
100%	25.1	7.00	8.35	8.7	7.2	826	4	4	5		New WQ
											Renewal Time 1246
											Renewal Signoff
											Old WQ
Meter ID	33A	pH14	pH09	RDO3	RDO3	EC03					
Lab Water Control	25.0	7.81	7.74	9.1	8.5	278	2	5	5	—	Date 2-6-10
50%	25.0	7.10	8.22	9.4	8.5	560	5	5	5	—	Test Solution Prep XB
100%	25.0	6.94	8.42	9.9	8.5	822	3	4	5	—	New WQ
											Renewal Time 1430
											Renewal Signoff EMK
											Old WQ JT
Meter ID	33A	pH11	pH11	RDO1	RDO3	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37837 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5234 Age: 48 hrs
Organism Supplier: ENVIRO
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: Baseline

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	25.0 24A	7.74	7.80	9.1	7.2	249	2	5	5		Date 2/7/10
50%	24A 24A	7.40	8.26	9.0	7.5	509	5	5	5		Test Solution Prep PA
100%	24A	7.26	8.50	9.3	7.6	811	1	4	3		New WQ QL
											Renewal Time 1030
											Renewal Signoff
											Old WQ CM
Meter ID	33A	PH09	pH 11	RDO5	RDO2	EC03					
Lab Water Control	25.0	8.12	7.76	9.1	8.4	335	2	5	5		Date 2/8/10
50%	25.0	7.24	8.28	9.8	9.3	JA 591 8.29 887	5	5	5		Test Solution Prep PA
100%	25.0	7.40	8.52	9.6	8.3	JA 591 887	0	2	1		New WQ NVS
											Renewal Time 1415
											Renewal Signoff
											Old WQ HV
Meter ID	33A	pH03	PH 11	RDO2	RDO1	EC03					
Lab Water Control	25.1	7.91	7.95	8.3	8.0	330	2	5	5		Date 2/9/10
50%	25.1	7.23	8.33	9.2	8.1	564	5	5	5		Test Solution Prep
100%	25.1	7.05	8.48	10.2	7.9	802	—	2	1		New WQ JT
											Renewal Time 1125
											Renewal Signoff
											Old WQ JT
Meter ID	33A	PH11	PH03	RDO2	RDO3	EC04					
Lab Water Control	25.4		7.97		7.8	349	2	5	5		Date 2/10/10
50%	25.4		8.33		7.2	599	5	4	5		Termination Time 1200
100%	25.4		8.51		7.6	844	—	1	1		Termination Signoff
											Old WQ AW
Meter ID	33A		PH03		RDO3	EC05					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical**
Test Material: Inlet to Res B
Test ID#: 37838 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5035 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 6

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	SIGN-OFF
Blank	25.7	6.01		8.9		338	5	5	5	Date 2-3-10
50%	25.7	6.01		9.3		640	5	5	5	Test Solution Prep MB
100%	25.7	5.99		10.1		911	5	5	5	New WQ EMC
										Initiation Time 1800
										Initiation Signoff JPC
										Sample ID 23374
Meter ID	30A	pH03		RD03		EC05				
Blank	25.1	5.99	7.67	8.1	8.3	340	5	5	5	Date 2-4-10
50%	25.1	6.00	7.46	8.6	8.3	645	0	2	2	Test Solution Prep JC
100%	25.1	5.99	7.75	8.9	8.4	931	0	0	0	New WQ DS
										Renewal Time 1700
										Renewal Signoff JM
										Old WQ HV
Meter ID	30A	pH03	pH03	RD01	RD03	EC03				
Blank	25.4	6.02	7.47	9.4	7.2	344	5	5	5	Date 2/5/10
50%	—	—	—	—	—	—	—	0	0	Test Solution Prep PD
100%	—	—	—	—	—	—	—	—	—	New WQ BH
										Renewal Time 1130
										Renewal Signoff JT
										Old WQ NVS
Meter ID	30A	pH09	pH03	RD03	RD02	EC03				
Blank	25.4	6.00	7.22	8.6	8.2	344	5	5	5	Date 2-6-10
50%	—	—	—	—	—	—	—	—	—	Test Solution Prep MB
100%	—	—	—	—	—	—	—	—	—	New WQ NVS
										Renewal Time 1500
										Renewal Signoff JM
										Old WQ CG
Meter ID	33A	pH03	pH11	RD03	RD03	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37838 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5035 Age: <48 hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 6

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	24.8	6.09	7.52	8.5	7.7	350	5	5	5		Date 2/3/10 2/5/10
50%	—	—	—	—	—	—	—	—	—		Test Solution Prep PA
100%	—	—	—	—	—	—	—	—	—		New WQ QL
											Renewal Time 1045
											Renewal Signoff SH
											Old WQ CG
Meter ID	33A	PH07	pH11	RD02	RD02	EC05					
Blank	25.0	6.00	7.82	10.6	7.4	346	5	5	5		Date 2/8/10
50%	—	—	—	—	—	—	—	—	—		Test Solution Prep JL
100%	—	—	—	—	—	—	—	—	—		New WQ FOUR
											Renewal Time 1330
											Renewal Signoff JM
											Old WQ NVS
Meter ID	33A	PH03	pH09	RD01	RD03	EC04					
Blank	24.9	7.00 6.00	7.28	10.4	8.2	351	2	5	5		Date 2/9/10
50%	—	—	—	—	—	—	—	—	—		Test Solution Prep SM
100%	—	—	—	—	—	—	—	—	—		New WQ SM/JT
											Renewal Time 1130
											Renewal Signoff JT
											Old WQ JT
Meter ID	33A	pH09	PH03	RD02	RD03	EC04					
Blank	25.4	6.99 6.00			7.2	367	2	5	5		Date 2/10/10
50%	—	—	—		—	—	—	—	—		Termination Time 1205
100%	—	—	—		—	—	—	—	—		Termination Signoff JM
											Old WQ YL
Meter ID	33A		PH09		RD01	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37838 Project #: 15695
Test Date: 2/3/10 Randomization: ~

Organism Log#: 5035 Age: 48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 7

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.7	7.00		9.4		330	5	5	5	Date 2.3.10
50%	25.7	7.00		8.8		699	5	5	5	Test Solution Prep AB
100%	25.7	6.99		9.0		1109	5	5	5	New WQ EW
										Initiation Time 1800
										Initiation Signoff JPC
										Sample ID 23774
Meter ID	30A	PH03		RD03		~~pH~~ EC05				
Blank	25.1	6.99	7.75	8.3	8.4	324	5	5	5	Date 2-4-10
50%	25.1	7.00	8.20	8.6	8.5	736	5	5	5	Test Solution Prep JC
100%	25.1	7.00	8.46	8.6	8.4	1145	5	5	5	New WQ DS
										Renewal Time 1200
										Renewal Signoff JA
										Old WQ HV
Meter ID	30A	PH03	~~PH11~~	RD01	RD03	EC05				
Blank	25.4	6.90	7.80	9.8	7.7	336	5	5	5	Date 2/5/10
50%	25.4	7.10	8.25	10.1	7.6	741	5	5	5	Test Solution Prep PA
100%	25.4	6.90	8.60	10.3	7.9	1139	5	5	4	New WQ BH
										Renewal Time 1130
										Renewal Signoff JT
										Old WQ NVS
Meter ID	30A	PH09	PH03	RD03	RD02	EC03				
Blank	25.4	7.00	7.62	8.5	8.2	332	5	5	5	Date 2-6-10
50%	25.4	7.31	8.14	8.9	8.1	744	5	5	5	Test Solution Prep AB
100%	25.4	7.01	8.46	9.0	8.1	1164	5	2	3	New WQ NVS
										Renewal Time 1500
										Renewal Signoff BH
										Old WQ [illegible]
Meter ID	30A	pH03	pH11	RD03	RD03	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37838 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5035 Age: <48 hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 7

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	24.8	7.00	7.73	8.5	7.6	331/1202	5	5	5		Date 2/5/10 2/7/10
50%	24.8	7.04	8.12	8.8	7.7	760	5	5	5		Test Solution Prep BA
100%	24.8	7.04	8.36	9.1	7.6	1202	4	1	2		New WQ DL
											Renewal Time 1045
											Renewal Signoff SH
											Old WQ CB
Meter ID	33A	PH03	pH11	RD03	RD02	EC03					
Blank	25.0	7.00	7.77	10.9	7.1	328	5	5	3		Date 2/8/10
50%	25.0	7.00	8.14	10.9	7.2	761	5	5	5		Test Solution Prep JL
100%	25.0	7.00	8.35	11.3	7.2	1178	3	1	0		New WQ FAB
											Renewal Time 1330
											Renewal Signoff
											Old WQ NVS
Meter ID	33A	PH03	pH09	RD01	RD03	EC04					
Blank	24.8	7.00	7.83	10.0	8.1	331	5	5	3		Date 2/9/10
50%	24.8	7.31	8.12	10.0	8.0	785	4	5	5		Test Solution Prep SM
100%	24.8	7.00	8.39	9.9	7.9	1208	2	0	—		New WQ SM/JT
											Renewal Time 1130
											Renewal Signoff JT
											Old WQ JT
Meter ID	33A	pH09	PH03	RD02	RD03	EC04					
Blank	25.9	7.43	7.43		7.6	355	5	5	3		Date 2/10/10
50%	25.4		7.60		7.7	825	2	4	4		Termination Time 1205
100%	25.4		7.97		7.6	1294	1	—	—		Termination Signoff
											Old WQ
Meter ID	33A		pH09		RD01	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37838 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5035 Age: ~48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 8

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.7	7.98		8.3		323	5	5	5	Date 2.3.10
50%	25.7	8.00		8.9		631	5	5	5	Test Solution Prep KB
100%	25.7	8.00		9.3		948	5	5	5	New WQ EWC
										Initiation Time 1800
										Initiation Signoff JPC
										Sample ID 03374
Meter ID	30A	pH03		RDO3		EC05				
Blank	25.1	7.99	7.92	8.2	8.4	317	5	5	5	Date 2-4-10
50%	25.1	7.99	8.42	8.3	8.5	651	5	5	5	Test Solution Prep JR
100%	25.1	8.00	8.60	8.6	8.5	960	5	5	5	New WQ DS
										Renewal Time 1200
										Renewal Signoff JRW
										Old WQ HV
Meter ID	30A	pH03	pH03	RDO1	RDO3	EC03				
Blank	25.4	8.09	7.95	9.6	7.4	329	5	5	5	Date 2/5/10
50%	25.4	7.97	8.47	9.8	7.4	631	5	5	5	Test Solution Prep PA
100%	25.4	8.08	8.72	10.1	7.8	958	5	5	5	New WQ BH
										Renewal Time 1130
										Renewal Signoff JT
										Old WQ NVS
Meter ID	30A	pH09	pH03	RDO3	RDO2	EC03				
Blank	25.4	8.00	7.92	8.7	8.1	318	5	4	5	Date 2-6-10
50%	25.4	8.25	8.41	8.8	8.1	627	5	5	5	Test Solution Prep KB
100%	25.4	8.00	8.56	8.9	8.0	943	5	5	5	New WQ NVS
										Renewal Time 1500
										Renewal Signoff Sm
										Old WQ CG
Meter ID	30A	pH03	pH11	RDO3	RDO3	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37838 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5035 Age: <48 hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 8

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	24.8	7.90	~~7.97~~ 8.08	8.5	~~8.4~~ 7.6	322	~~SH~~ 4	3	4		Date 2/7/10
50%	24.8	7.97	8.35	8.6	7.6	650	5	5	4		Test Solution Prep PR
100%	24.8	7.97	8.52	8.5	~~7.6~~ 7.4	987	4	3	4		New WQ QL
											Renewal Time 1045
											Renewal Signoff SH
											Old WQ QG
Meter ID	33A	PH03	pH11	RDO3	RDO2	EC03					
Blank	25.0	8.00	7.97	11.3	7.4	321	4	3	4		Date 2/8/10
50%	25.0	7.99	8.39	11.3	7.4	651	5	5	4		Test Solution Prep JR
100%	25.0	7.99	8.54	11.3	7.4	976	4	3	3		New WQ FOUR
											Renewal Time 1330
											Renewal Signoff
											Old WQ NVS
Meter ID	33A	PH03	pH09	RDO1	RDO3	EC04					
Blank	24.8	8.00	8.05	9.8	8.2	320	4	3	4		Date 2/9/10
50%	24.8	8.09	8.49	10.0	8.1	662	5	5	4		Test Solution Prep SM
100%	24.8	8.00	8.58	9.9	7.8	1005	2	3	2		New WQ SM / JT
											Renewal Time 1130
											Renewal Signoff JT
				RDO1							Old WQ JT
Meter ID	33A	pH09	PH03	~~RDO1~~	RDO3	EC04					
Blank	25A		8.02		8.2	363	4	3	4		Date 2/10/10
50%	25A		8.20		8.0	693	4	5	3		Termination Time 1705
100%	25A		8.46		8.0	1052	2	3	2		Termination Signoff
											Old WQ YL
Meter ID	33A		pH09		RDO1	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: 48hrs
Organism Supplier: Envir Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: Baseline #2

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C		SIGN-OFF
Lab Water Control	25.5	7.60		8.4		267	5	5	5		Date 2-4-10
50%	25.5	6.92		9.0		541	5	5	5		Test Solution Prep JL
100%	25.5	6.70		9.5		811	5	5	5		New WQ JL
											Initiation Time 1915
											Initiation Signoff AB
											Sample ID 23374
Meter ID	30A	pH09		RD02		EC03					
Lab Water Control	25.4	7.04	7.91	9.3	8.1	283	5	5	5		Date 2/5/10
50%	25.4	7.87	8.36	8.9	8.1	548	5	5	5		Test Solution Prep PA
100%	25.4	7.79	8.00	9.0	7.9	816	5	5	4		New WQ AB
											Renewal Time 1150
											Renewal Signoff AB
											Old WQ BIJ
Meter ID	30A	pH03	pH11	RD02	RD03	EC04					
Lab Water Control	25.1	7.91	7.83	8.9	8.0	2850 361	5	5	5		Date 2/6/10
50%	25.1	7.31	8.26	9.2	7.9	560	5	5	5		Test Solution Prep BM
100%	25.1	7.19	8.49	9.6	8.1	837	5	6	4		New WQ CG
											Renewal Time 1610
											Renewal Signoff
											Old WQ JL
Meter ID	30A	pH11	pH11	RD01	RD03	EC03					
Lab Water Control	25.5	7.81	7.74	8.7	7.8	283	5	5	5	—	Date 2/7/10
50%	25.5	7.17	8.30	9.2	7.7	534	5	5	5	—	Test Solution Prep BM
100%	25.5	6.95	8.28	10.0	7.8	818	4	5	4	—	New WQ CG
											Renewal Time 1000
											Renewal Signoff PA
											Old WQ CG
Meter ID	30A	pH11	pH11	RD02	RD02	EC04					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: <48 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: Baseline #2

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	25.5	7.95	7.57	8.9	8.5	333	5	5	5		Date 2/8/10
50%	25.5	7.39	8.31	8.9	8.5	563	5	4	4		Test Solution Prep PA
100%	25.5	7.23	8.54	9.5	9.5	805	3	4	2		New WQ FOWB
											Renewal Time 1420
											Renewal Signoff JR
											Old WQ HV
Meter ID	30A	pH11	pH 09	RDO1	RD03	EC04					
Lab Water Control	25.2	~~8.07~~ 7.90	7.79	8.8	8.5	339	5	5	5		Date 2/9/10
50%	25.2	7.90	8.36	8.9	8.2	581	5	4	4		Test Solution Prep PA
100%	25.2	7.24	8.83	9.4	7.8	830	3	4	2		New WQ JR
											Renewal Time 1420
											Renewal Signoff
											Old WQ DD
Meter ID	30A	pH03	pH03	RDO1	RD03	EC03					
Lab Water Control	24.9	7.64	7.72	8.7	7.9	335	5	5	5		Date 2/10/10
50%	24.6	7.03	8.19	9.4	8.0	578	5	4	4		Test Solution Prep SM
100%	24.9	6.69	8.36	10.6	7.9	831	1	3	1		New WQ SM
											Renewal Time 1240
											Renewal Signoff JR
											Old WQ MO
Meter ID	30A	pH11	pH11	RDO2	RD03	EC04					
Lab Water Control	25.5		7.93		7.5	397	5	5	5		Date 2.11.10
50%	25.5		8.29		7.3	632	5	4	3		Termination Time 1115
100%	25.5		8.50		7.2	881	0	1	1		Termination Signoff EM
											Old WQ EM
Meter ID	30A		pH03		RD01	EC04					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: 48 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 3

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.5	7.23		8.7		537	5	5	5	Date 2-4-10
50%	25.5	7.06		8.9		791	5	5	5	Test Solution Prep JL
100%	25.5	6.97		9.3		1294	5	5	5	New WQ JL
										Initiation Time 1915
										Initiation Signoff KB
										Sample ID 23374
Meter ID	30A	PH09		RD02		EC03				
Blank	25.4	7.76	7.43	8.9	8.0	527	5	5	5	Date 2/5/10
50%	25.4	8.06	7.99	8.7	8.0	794	5	5	5	Test Solution Prep PA
100%	25.4	8.14	8.12	8.7	8.0	1297	5	5	5	New WQ AB
										Renewal Time 1650
										Renewal Signoff KB
										Old WQ BH
Meter ID	30A	PH03	PH11	RD02	RD03	EC04				
Blank	25.1	7.86	7.77	9.9	8.2	563	5	5	5	Date 2/6/10
50%	25.1	7.86	8.01	9.7	8.2	824	5	5	5	Test Solution Prep 8m
100%	25.1	6.70	8.22	9.6	8.0	1361	5	5	5	New WQ 8m ICG
										Renewal Time 1610
										Renewal Signoff 8m
										Old WQ JL
Meter ID	30A	pH09/11	PH11	RD01	RD03	EC03				
Blank	25.5	7.52	7.59	9.8	7.4	531	5	5	5	Date 2/7/10
50%	25.5	7.52	7.98	9.3	7.7	796	5	5	5	Test Solution Prep PA
100%	25.5	7.34	8.08	9.6	7.7	1326	5	5	4	New WQ ICG
										Renewal Time 1600
										Renewal Signoff PA
										Old WQ ICG
Meter ID	30A	pH11	pH11	RD02	RD02	EC04				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: 48 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPA MH
Control Water Batch: 1282
Treatment: pH 3

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.5	7.60	7.78	9.9	8.4	535	5	5	5		Date 2/4/10 2/5/10
50%	25.5	7.72	7.91	9.6	8.4	833	5	5	5		Test Solution Prep PA
100%	25.5	7.70	8.09	9.8	8.2	1311	4	5	4		New WQ FOUR
											Renewal Time 1420
											Renewal Signoff
											Old WQ HV
Meter ID	30A	pH11	pH 09	RD01	RD03	EC01					
Blank	25.2	~~7.41~~ 7.63	7.54	9.9	7.8	552	5	5	5		Date 2/4/10
50%	25.2	~~7.73~~ 6.96	7.90	9.3	7.7	841	5	5	5		Test Solution Prep
100%	25.2	~~7.88~~ 6.74	8.00	9.7	8.0	1344	4	4	2		New WQ JPC
											Renewal Time 1420
											Renewal Signoff
											Old WQ DS
Meter ID	30A	pH03	pH08	RD01	RD03	EC08					
Blank	24.9	7.80	7.70	10.4	7.8	555	5	5	5		Date 2/10/10
50%	24.9	7.23	7.92	9.4	7.9	846	5	5	5		Test Solution Prep SM
100%	24.9	6.70	7.93	10.3	7.8	1355	4	4	2		New WQ SM
											Renewal Time 1240
											Renewal Signoff
											Old WQ MO
Meter ID	30A	pH11	pH11	RD02	RD02	EC04					
Blank	25.5		7.73		7.7	610	5	5	5		Date 2.11.10
50%	25.5		7.80		7.3	933	5	5	5		Termination Time 1115
100%	25.5		7.69		6.8	1485	2	1	1		Termination Signoff EKK
											Old WQ EKK
Meter ID	30A		pH03		RD01	EC04					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: <48 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 9

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C		SIGN-OFF
Blank	25.5	7.89		8.8		423	5	5	5		Date: 2-4-10
50%	25.5	7.18		8.8		702	5	5	5		Test Solution Prep: JR
100%	25.5	7.01		9.2		1138	5	5	5		New WQ: [illegible]
											Initiation Time: 1915
											Initiation Signoff: AB
											Sample ID: 23374
Meter ID	30A	PH01		RD02		EC03					
Blank	25.4	7.99	7.91	9.0	8.3	379	5	5	5		Date: 2/5/10
50%	25.4	8.14	8.30	8.5	8.1	697	5	5	5		Test Solution Prep: PA
100%	25.4	8.24	8.50	8.8	8.1	1135	5	5	5		New WQ: AB
											Renewal Time: 1450
											Renewal Signoff: AB
											Old WQ: BH
Meter ID	30A	pH03	pH11	RD02	RD03	EC04					
Blank	25.1	7.85	8.08	9.8	8.4	426	5	5	5		Date: 2/6/10
50%	25.1	7.23	8.22	9.4	8.3	754	5	5	5		Test Solution Prep: SM
100%	25.1	6.70	8.47	9.7	7.8	1229	5	5	5		New WQ: SM/CG
											Renewal Time: 1610
											Renewal Signoff: SM
											Old WQ: JR
Meter ID	30A	pH09/	pH11	RD01	RD01	EC03					
Blank	25.5	7.72	7.80	9.9	7.8	416	5	5	5		Date: 2/7/10
50%	25.5	7.53	8.19	8.8	7.7	749	5	5	5		Test Solution Prep: PA
100%	25.5	7.38	8.30	10.0	7.8	1196	5	5	5		New WQ: CG
											Renewal Time: 1000
											Renewal Signoff: PA
											Old WQ: CG
Meter ID	30A	pH11	pH11	RD02	RD02	EC04					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: <48 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 9

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.5 ~~7.78~~ 7.08	~~7.78~~	7.81	9.6	8.1	418	5	5	5		Date 2/8/10
50%	25.5	7.86	8.10	9.5	8.4	761	5	5	5		Test Solution Prep PT
100%	25.5	7.84	8.33	9.8	8.4	1186	5	4	5		New WQ FOUR
											Renewal Time 1420
											Renewal Signoff JM
											Old WQ HV
Meter ID	30A	PH11	PH 09	RD01	RD03	EC04					
Blank	25.2	~~7.78~~ 7.86	7.84	9.4	8.3	431	5	5	5		Date 2/9/10
50%	25.2	~~8.07~~ 8.14	~~8.03~~ 8.13	9.0	8.1	773	5	5	4		Test Solution Prep PA
100%	25.2	~~8.66~~ 8.67	8.30	9.3	8.2	1214	~~4~~ 3	3	5		New WQ JPC
											Renewal Time 1420
											Renewal Signoff
											Old WQ DS
Meter ID	30A	pH03	PH03	RD01	RD03	EC03					
Blank	24.9	7.87	7.68	10.5	7.6	~~455~~ 422	5	5	5		Date 2/10/10
50%	24.9	7.14	7.90	9.3	7.7	784	5	5	4		Test Solution Prep SM
100%	24.9	6.70	8.05	10.0	7.9	1224	3	1	5		New WQ SM
											Renewal Time 1240
											Renewal Signoff
											Old WQ MO
Meter ID	30A	pH11	pH11	RD02	RD02	EC04					
Blank	25.5		7.88		7.4	457	5	5	5		Date 2.11.10
50%	25.5		8.07		7.2	829	4	5	4		Termination Time 1115
100%	25.5		8.10		7.2	1298	0	1	2		Termination Signoff BRK
											Old WQ BRK
Meter ID	30A		pH 03		RD01	EC04					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: -

Organism Log#: 5040 Age: 248 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 3 Filtration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.5	7.47		8.6		580	5	5	5	Date: 2-4-10
50%	25.5	7.12		8.9		830	5	5	5	Test Solution Prep: JL
100%	25.5	6.99		9.2		1377	5	5	5	New WQ: JW
										Initiation Time: 1915
										Initiation Signoff: AB
										Sample ID: 23374
Meter ID	30A	pH04		RD02		EC03				
Blank	25.4	7.68	7.56	8.6	8.1	548	5	5	5	Date: 2/5/10
50%	25.4	8.11	8.13	8.4	7.9	881	5	5	5	Test Solution Prep: PA
100%	25.4	7.99	8.32	8.6	7.9	1371	5	5	5	New WQ: AB
										Renewal Time: 1650
										Renewal Signoff: AB
										Old WQ: BH
Meter ID	30A	pH03	pH11	RD02	RD03	EC04				
Blank	25.1	7.86	7.91	9.6	8.0	543	5	5	5	Date: 2/6/10
50%	25.1	7.03	8.04	9.6	8.1	885	5	5	5	Test Solution Prep: JM
100%	25.1	6.70	8.30	9.9	7.9	1433	5	5	5	New WQ: JM/CG
										Renewal Time: 1610
										Renewal Signoff: [illegible]
										Old WQ: JL
Meter ID	30A	pH04/11	pH11	RD01	RD03	EC03				
Blank	25.5	7.54	7.56	9.7	7.6	568	5	5	5	Date: 2/7/10
50%	25.5	7.27	8.09	9.2	7.7	851	5	5	5	Test Solution Prep: PA
100%	25.5	7.09	8.26	9.8	7.7	1404	5	5	5	New WQ: CG
										Renewal Time: 1500
										Renewal Signoff: PA
										Old WQ: CG
Meter ID	30A	pH11	pH11	RD08	RD02	EC04				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: -

Organism Log#: 5040 Age: 24 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 3 Filtration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.5	7.61	7.67	9.8	8.5	573	5	5	5		Date 2/8/10
50%	25.5	7.52	8.04	9.7	8.5	896	5	5	5		Test Solution Prep PA
100%	25.5	7.43	8.26	9.7	8.3	1286	5	5	5		New WQ FOB
											Renewal Time 1420
											Renewal Signoff
											Old WQ HV
Meter ID	30A	pH11	pH 09	RD01	RD03	EC04					
Blank	25.2	7.44	7.43	9.4	7.7	601	5	5	5		Date 2/9/10
50%	25.2	6.96	8.05	9.1	7.9	865	5	5	5		Test Solution Prep PA
100%	25.2	6.52	8.18	9.0	7.7	1383	5	5	5		New WQ JAE
											Renewal Time 1420
											Renewal Signoff
											Old WQ DO
Meter ID	30A	pH03	pH05	RD01	RD05	EC03					
Blank	24.9	7.87	7.52	10.1	7.7	568	5	5	5		Date 2/10/10
50%	24.8	7.06	7.97	9.7	7.8	876	5	5	5		Test Solution Prep SM
100%	24.9	6.69	8.01	10.3	8.4	1409	5	4	5		New WQ SM
											Renewal Time 1240
											Renewal Signoff
											Old WQ MO
Meter ID	30A	pH11	pH11	RD02	RD02	EC04					
Blank	25.5		7.60		7.3	645	5	5	5		Date 2.11.10
50%	25.5		8.02		7.4	990	5	5	5		Termination Time 1115
100%	25.5		8.11		7.5	1512	5	4	5		Termination Signoff EKK
											Old WQ EKK
Meter ID	30A		pH 03		RD01	EC04					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37837 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5034 Age: <48 hrs
Organism Supplier: ENVIRO
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: Filtration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.0	7.78		9.0		321	5	5	5	Date: 2.3.10
50%	25.0	7.15		9.0		564	5	5	5	Test Solution Prep: AB
100%	25.0	6.94		9.7		814	5	5	5	New WQ: BMC
										Initiation Time: 1800
										Initiation Signoff: JR
										Sample ID: 23374
Meter ID	33A	pH 11		RDO3		EC05				
Blank	25.0	7.80	8.14	8.6	7.3	315	5	5	5	Date: 2-4-10
50%	25.1	7.42	8.32	7.7	7.4	576	5	5	5	Test Solution Prep: JR
100%	25.0	7.52	8.42	7.9	7.3	811	5	5	5	New WQ: DS
										Renewal Time: 1145
										Renewal Signoff: JR
										Old WQ: MO
Meter ID	33A	pH 4	pH 9	RDO3	RDO2	EC01				
Blank	25.1	7.63 pH 4 Buffer	8.28	9.8	7.1	324	5	5	5	Date: 2/5/10
50%	25.1	7.15	8.16	9.6	7.5	570	5	5	5	Test Solution Prep: PA
100%	25.1	6.99	8.30	9.3	7.0	826	5	5	5	New WQ: BC
										Renewal Time: 1240
										Renewal Signoff: JR
										Old WQ: MM
Meter ID	33A	pH 4	pH 9	RDO1	RDO3	EC03				
Blank	25.0	7.96	7.90	10.1	8.0	321	5	5	5	Date: 2-5-10
50%	25.0	7.31	8.18	9.9	8.4	559	5	5	5	Test Solution Prep: AB
100%	25.0	7.17	8.40	10.0	8.4	832	5	5	5	New WQ: CG
										Renewal Time: 1430
										Renewal Signoff: BMC
										Old WQ: JT
Meter ID	33A	pH 11	PH11	RDO1	RDO3	EC03				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37837 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5034 Age: C48h5
Organism Supplier: ENVIRO
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: Filtration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	24.9	8.04	7.88	9.5	7.5	314	5	5	5		Date 2/7/10
50%	24.9	7.60	8.24	9.2	7.5	541	5	5	5		Test Solution Prep PA
100%	24.9	7.46	8.47	9.7	7.6	812	5	5	5		New WQ DL
											Renewal Time 1030
											Renewal Signoff DW
											Old WQ CG
Meter ID	33A	pH11	pH11	RD02	RD02	EC05					
Blank	25.0	8.05	7.97	9.6	8.5	306	5	5	5		Date 2/8/10
50%	25.0	7.75	8.28	9.5	8.4	579	5	5	5		Test Solution Prep PA
100%	25.0	7.70	8.53	10.1	8.2	828	5	5	4		New WQ NVS
											Renewal Time 1415
											Renewal Signoff [illegible]
											Old WQ HV
Meter ID	35A	pH03	pH11	RD02	RD01	EC03					
Blank	25.0	7.87	7.90	10.7	7.9	310	5	5	5		Date 2/9/10
50%	25.0	7.86	8.34	9.2	7.9	569	5	5	5		Test Solution Prep [illegible]
100%	25.0	7.58	8.51	10.5	7.8	808	4	5	4		New WQ JT
											Renewal Time 1125
											Renewal Signoff JPW
											Old WQ JT
Meter ID	13A	pH11	pH03	RD02	RD03	EC04					
Blank	25.1		7.94		7.4	354	5	5	5		Date 2/10/10
50%	25.4		8.21		7.6	612	5	5	5		Termination Time 1700
100%	25.4		8.51		7.8	854	3	5/4	4		Termination Signoff JPW
											Old WQ EW
Meter ID	33A		pH03		RD03	EC05					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: 248hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 9 Filtration

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.5	7.73		8.4		380	5	5	5	Date: 2-4-10
50%	25.5	7.05		8.9		704	5	5	5	Test Solution Prep: JZ
100%	25.5	6.93		9.3		1132	5	5	5	New WQ: JZ
										Initiation Time: 1915
										Initiation Signoff: AB
										Sample ID: 03374
Meter ID	30A	pH09		RD02		EC03				
Blank	25.4	8.05	7.93	8.5	8.2	377	5	5	5	Date: 2/5/10
50%	25.4	8.24	8.34	8.6	8.0	653	5	5	5	Test Solution Prep: PA
100%	25.4	8.16	8.50	8.6	8.0	1133	5	5	5	New WQ: AB
										Renewal Time: 1650
										Renewal Signoff: AB
										Old WQ: BH
Meter ID	30A	pH03	pH11	RD02	RD02	EC04				
Blank	25.1	7.88	8.22	9.8	8.2	388	5	5	5	Date: 2/6/10
50%	25.1	7.03	8.28	9.5	8.1	725	5	5	5	Test Solution Prep: sm
100%	25.1	~~7.60~~ 7.68	8.51	9.9	7.6	1194	5	5	5	New WQ: sm/CG
		8.48								Renewal Time: 1610
										Renewal Signoff: sm
										Old WQ: JZ
Meter ID	30A	pH09	pH11	RD01	RD03	EC03				
Blank	25.5	7.84	7.84	9.6	7.9	363	5	5	5	Date: 2/7/10
50%	25.5	7.22	8.24	9.2	7.7	729	5	5	5	Test Solution Prep: PA
100%	25.5	7.20	8.45	9.8	7.8	1166	5	5	5	New WQ: CG
										Renewal Time: 1000
										Renewal Signoff: PA
										Old WQ: CG
Meter ID	30A	pH11	pH11	RD01	RD02	EC04				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: 48 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH 9 Filtration

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.5	7.91	7.89	9.7	8.4	368	5	5	5		Date: 2/8/10
50%	25.5	7.65	8.24	9.6	9.4	733	5	5	5		Test Solution Prep: PD
100%	25.5	7.44	8.47	9.6	8.3	1154	5	5	5		New WQ: FOUB
											Renewal Time: 1420
											Renewal Signoff: JM
											Old WQ: HV
Meter ID	30A	pH 11	pH 09	RD01	RD03	EC01					
Blank	25.2	7.89	7.89	9.2	8.2	380	5	5	5		Date: 2/9/10
50%	25.2	8.16	8.16	9.0	8.3	757	5	5	5		Test Solution Prep: PA
100%	25.2	8.45	8.45	9.3	8.2	1179	4	4	5		New WQ: JPC
											Renewal Time: 1420
											Renewal Signoff:
											Old WQ: DS
Meter ID	30A	pH 03	pH 03	RD01	RD03	EC03					
Blank	24.9	7.88	7.75	10.3	7.8	374	5	5	5		Date: 2/10/10
50%	24.9	8.09	8.09	9.5	8.1	751	5	5	5		Test Solution Prep: SM
100%	24.9	8.28	8.28	10.3	8.0	1156	4	4	5		New WQ: SM
											Renewal Time: 1240
											Renewal Signoff: JM
											Old WQ: HO
Meter ID	30A	pH 11	pH 11	RD01	RD01	EC04					
Blank	25.5		7.92		6.6	400	5	5	5		Date: 2.11.10
50%	25.5		8.20		7.1	811	5	4	5		Termination Time: 1115
100%	25.5		8.36		7.1	1292	4	4	5		Termination Signoff: EMK
											Old WQ: EMK
Meter ID	30A		pH 03		RD01	EC04					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization:

Organism Log#: 5040 Age: 48hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH3 C18 SPE

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.5	7.36		8.6		535	5	5	5	Date: 2-4-10
50%	25.5	7.21		8.6		777	5	5	5	Test Solution Prep: JZ
100%	25.5	7.03		8.6		1265	5	5	5	New WQ:
										Initiation Time: 1915
										Initiation Signoff: AB
										Sample ID: 23374
Meter ID	30A	pH09		RDO2		EC03				
Blank	25.4	7.56	7.72	8.7	8.2	513	5	5	5	Date: 2/5/10
50%	25.4	8.01	8.10	8.5	8.1	765	5	5	5	Test Solution Prep: PA
100%	25.4	8.06	8.23	8.5	7.9	1266	5	5	5	New WQ: AB
										Renewal Time: 1050
										Renewal Signoff: AB
										Old WQ: BH
Meter ID	30A	pH03	pH11	RDO2	RDO3	EC04				
Blank	25.1	7.86	8.05	9.7	7.9	550	5	5	5	Date: 2/6/10
50%	25.1	7.11	7.91	9.5	8.0	809	5	5	5	Test Solution Prep: SM
100%	25.1	6.71	8.05	9.6	8.1	1318	5	5	5	New WQ: SM
										Renewal Time: 1610
										Renewal Signoff: SM
										Old WQ: JZ
Meter ID	30A	pH09/11	pH11	RDO1	RDO3	EC03				
Blank	25.5	~~7.39~~ 7.22	7.47	~~4.5~~ 10.2	6.7	517	5	4	5	Date: 2/7/10
50%	25.5	7.23	7.87	9.2	7.7	764	5	5	5	Test Solution Prep:
100%	25.5	7.00	7.98	9.8	7.4	1281	5	5	5	New WQ: CH
										Renewal Time: 1000
										Renewal Signoff: TA
										Old WQ: CH
Meter ID	30A	pH11	pH11	RDO2	RDO2	EC04				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization:

Organism Log#: 5040 Age: <48hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH3 C18 SPE

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.5	7.52	7.70	9.9	8.2	531	5	5	5		Date: 2/8/10
50%	25.5	7.71	7.87	9.6	8.3	783	5	5	5		Test Solution Prep: PA
100%	25.5	7.57	7.99	9.4	9.3	1278	5	5	5		New WQ: FOUR
											Renewal Time: 1420
											Renewal Signoff: JPW
											Old WQ: HV
Meter ID	30A	pH11	pH 09	RDO1	RDO3	ECO4					
Blank	25.2	7.56 7.06	7.36	9.3	7.6	571	4	3	5		Date: 2/9/10
50%	25.2	7.81 7.82	7.91	9.0	7.8	820	5	5	5		Test Solution Prep: PA
100%	25.2	7.79 7.80	7.95	9.1	7.8	1281	5	5	5		New WQ: JPL
											Renewal Time: 1420
											Renewal Signoff:
											Old WQ: DS
Meter ID	30A	pH03	pH03	RDO1	RDO3	EC03					
Blank	24.9	7.86	7.36	10.0	7.7	527	4	3	5		Date: 2/10/10
50%	24.5	7.15	7.76	9.6	7.9	818	5	5	5		Test Solution Prep: SM
100%	24.9	6.70	7.79	10.4	8.1	1294	5	2	5		New WQ: SM
											Renewal Time: 1240
											Renewal Signoff: JPW
											Old WQ: MO
Meter ID	30A	pH11	pH11	RDO2	RDO2	ECO4					
Blank	25.6		7.60		7.4	582	3	3	4		Date: 2.11.10
50%	25.5		7.79		7.2	872	5	5	5		Termination Time: 1115
100%	25.5		7.82		7.2	1472	5	2	5		Termination Signoff: EKK
											Old WQ: EKK
Meter ID	30A		pH03		RDO1	ECO4					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37837 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5034 Age: 24-48 hrs
Organism Supplier: ENVIRO
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pHi C18 SPE

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	SIGN-OFF
Blank	25.0	7.76		9.6		315	5	5	5	Date 2.3.10
50%	25.0	7.44		9.6		566	5	5	5	Test Solution Prep [illegible]
100%	25.0	7.32		9.7		812	5	5	5	New WQ [illegible]
										Initiation Time 1800
										Initiation Signoff JR
										Sample ID 23374
Meter ID	33A	pH 11		RD03		EC05				
Blank	25.0	7.75	8.02	8.6	7.4	317	5	5	5	Date 2-4-10
50%	25.0	7.70	8.34	8.2	7.5	569	5	5	5	Test Solution Prep JR
100%	25.0	7.65	8.51	8.5	7.2	815	5	5	5	New WQ DD
										Renewal Time 1145
										Renewal Signoff JR
										Old WQ M.O.
Meter ID	33A	pH 11	pH 09	RD03	RD02	EC04				
Blank	25.1	7.72	8.23	9.7	7.1	325	5	5	5	Date 2/5/10
50%	25.1	7.86	8.20	9.5	7.3	556	5	5	5	Test Solution Prep PA
100%	25.1	7.88	8.32	9.5	7.3	827	5	5	5	New WQ [illegible]
										Renewal Time 1240
										Renewal Signoff JR
										Old WQ [illegible]
Meter ID	33A	pH 11	pH 09	RD01	~~pH 05~~ RD03	EC03				
Blank	25.0	7.83	7.72	10.0	7.8	312	5	5	5	Date 2-6-10
50%	25.0	8.03	8.13	9.7	7.9	863	5	5	5	Test Solution Prep [illegible]
100%	25.0	8.06	8.40	10.0	8.0	838	5	5	5	New WQ [illegible]
										Renewal Time 1430
										Renewal Signoff [illegible]
										Old WQ JT
Meter ID	33A	pH 11	pH 11	RD01	RD03	EC03				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37837 Project #: 15695
Test Date: 2/3/10 Randomization: —

Organism Log#: 5034 Age: <48hrs
Organism Supplier: ENVIRO
Control/Diluent: EPAMH
Control Water Batch: 1252
Treatment: pHi C18 SPE

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	24.9	8.03	7.95	9.7	7.4	339	5	5	5		Date 2/7/10
50%	24.9	8.19	8.27	9.2	7.5	552	4	5	5		Test Solution Prep PA
100%	24.9	8.28	8.49	9.6	7.5	818	5	5	5		New WQ RL
											Renewal Time 1030
											Renewal Signoff
											Old WQ CB
Meter ID	33A	PH09	pH11	RD03	RD02	EC03					
Blank	25.0	8.06	7.90	9.6	8.5	310	5	5	5		Date 2/8/10
50%	25.0	8.22	8.27	9.4	8.1	585	4	5	5		Test Solution Prep PA
100%	25.0	8.28	8.52	9.8	8.1	833	5	5	5		New WQ NVS
											Renewal Time 1415
											Renewal Signoff
											Old WQ HV
Meter ID	33A	PH03	PH11	RD02	RD01	EC03					
Blank	25.0	7.90	7.78	10.6	7.7	311	5	5	5		Date 2/9/10
50%	25.0	8.23	8.30	9.8	7.6	572	4	5	5		Test Solution Prep SM
100%	25.0	8.29	8.48	10.4	7.4	810	5	5	5		New WQ JT
											Renewal Time 1125
											Renewal Signoff
											Old WQ JT
Meter ID	33A	PH11	PH03	RD02	RD03	EC04					
Blank	25.4		8.12		7.7	329	5	5	5		Date 2/10/10
50%	25.4		8.26		7.6	1010	4	5	5		Termination Time 1700
100%	25.4		8.51		7.4	832	5	5	5		Termination Signoff
											Old WQ GW
Meter ID	33A		PH03		RD03	EC05					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: 48 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH9 C18 SPE

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.5	7.87		8.4		348	5	5	5	Date: 2-4-10
50%	25.5	7.12		8.7		710	5	5	5	Test Solution Prep: JZ
100%	25.5	6.99		8.8		1140	5	5	5	New WQ: JZ
										Initiation Time: 1715
										Initiation Signoff: AB
										Sample ID: 23374
Meter ID	30A	pH09		RD02		EC03				
Blank	25.4	8.08	7.97	8.7	8.2	334	5	5	5	Date: 2/5/10
50%	25.4	8.17	8.32	8.6	8.1	698	5	5	5	Test Solution Prep: PA
100%	25.4	8.25	8.51	8.4	8.1	1140	5	5	5	New WQ: AB
										Renewal Time: 1650
										Renewal Signoff: AB
										Old WQ: BH
Meter ID	30A	pH03	pH11	RD02	RD03	EC04				
Blank	25.1	7.87	8.14	9.7	7.8	350	5	5	5	Date: 2/6/10
50%	25.1	7.09	8.25	9.3	8.0	740	5	5	5	Test Solution Prep: Sm
100%	25.1	6.70	8.51	9.6	8.0	1214	5	5	5	New WQ: Sm/CG
										Renewal Time: 1610
										Renewal Signoff: Sm
										Old WQ: JZ
Meter ID	30A	pH09	pH11	RD01	RD03	EC03				
Blank	25.5	7.80 pH11	7.88	9.3	7.6	342	5	5	5	Date: 2/7/10
50%	25.5	7.34	8.17	9.2	7.6	745	5	5	5	Test Solution Prep: PA
100%	25.5	7.24	8.42	9.7	7.7	1189	5	5	5	New WQ: CG
										Renewal Time: 1000
										Renewal Signoff: PA
										Old WQ: CG
Meter ID	30A	pH11	pH11	RD02	RD02	EC04				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37839 Project #: 15695
Test Date: 2-4-10 Randomization: —

Organism Log#: 5040 Age: ~48 hrs
Organism Supplier: Enviro Sciences
Control/Diluent: EPAMH
Control Water Batch: 1282
Treatment: pH9 C18 SPE

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.5	7.90	7.96	9.7	8.6	345	5	5	5		Date 2/8/10
50%	25.5	7.61	8.14	9.5	8.6	750	5	5	5		Test Solution Prep PA
100%	25.5	7.50	8.41	9.7	8.5	1175	5	5	5		New WQ FOLB
											Renewal Time 1420
											Renewal Signoff JR
											Old WQ HV
Meter ID	30D	PH11 7.26	PH09	RD01	RD03	EC01					
Blank	25.2	7.98 7.79	7.83	9.4	8.1	360	5	5	5		Date 2/9/10
50%	25.2	7.84 PH	8.24	9.0	8.1	760	5	5	5		Test Solution Prep PA
100%	25.2	7.85	8.41	9.1	8.7	1202	5	5	5		New WQ SPG
											Renewal Time 1420
											Renewal Signoff
											Old WQ DJ
Meter ID	30A	PH03	PH03	RD01	RD03	EC03					
Blank	24.9	7.87	7.80	10.2	7.9	351	5	5	5		Date 2/10/10
50%	24.5	7.09	8.07	7.5	7.9	769	5	5	5		Test Solution Prep
100%	24.5	6.72	8.17	10.4	7.7	1215	5	5	5		New WQ
											Renewal Time 1240
											Renewal Signoff JPC
											Old WQ MO
Meter ID	30A	PH11	PH11	RD02	RD02	EC04					
Blank	25.5		7.97		8.3	373	5	5	5		Date 2.11.10
50%	25.5		8.11		7.5	835	5	5	5		Termination Time 1115
100%	25.5		8.22		7.1	1333	5	5	5		Termination Signoff EKK
											Old WQ EKK
Meter ID	30A		PH03		RD01	EC04					

Appendix E

Test Data for the Evaluation of Recovery of C18 Column Eluate Toxicity to *Ceriodaphnia dubia*

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 12/2/09

Project #: 15480 Test ID: 37046 Treatment: **Baseline** Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SIGN-OFF
Lab Water Control	0	7.95		9.5		228	[illegible]	0	0	0	0	0	Date: 12/2/09 New WQ: [illegible] Test Init: [illegible] Sol'n Prep: PA Time: 1500
	1	8.33	8.19	9.0	8.1	224	25.7	0	0	0	0	0	Date: 12/3/09 New WQ: SC Counts: [illegible] Sol'n Prep: PA Old WQ: SC Time: 1300
	2	8.17	8.30	9.5	9.1	226	25.9	0	0	0	0	0	Date: 12/4/09 New WQ: SC Counts: [illegible] Sol'n Prep: JT Old WQ: BH Time: 1515
	3	7.93	8.44	9.7	9.1	230	25.7	0	0	0	0	0	Date: 12/5/09 New WQ: [illegible] Counts: [illegible] Sol'n Prep: JT Old WQ: BH Time: 1300
	4	7.78	8.05	9.5	8.6	238	25.7	6	4	5	5	4	Date: 12/6/09 New WQ: SG Counts: SC Sol'n Prep: PA Old WQ: FOUB Time: 1010
	5	8.39	8.33	9.5	8.6	216	27.7	9	8	10	6	10	Date: 12/7/09 New WQ: SC Counts: PA Sol'n Prep: PA Old WQ: BH Time: 1545
	6	8.10	8.36	9.0	9.0	219	25.5	0	0	0	0	0	Date: 12/8/09 New WQ: SG Counts: PA Sol'n Prep: [illegible] Old WQ: FOUB Time: 1620
	7	–	8.22	–	8.5	268	25.5	15	12	13	16	12	Date: 12/9/09 New WQ: – Counts: PA Sol'n Prep: PA Old WQ: SC Time: 1700
	8												Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
							Total=	30	24	28	27	26	Mean Neonates/Female = 27.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 12/2/09

Project #: 15480 Test ID: 37046 Treatment: **Baseline** Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	7.78		9.8		537		0	0	0	0	0	
	1	8.14	8.53	9.0	8.0	465		0	0	0	0	0	
	2	8.04	8.53	9.6	8.8	532		0	0	0	0	0	
	3	7.70	8.56	9.5	7.4	495		0	0	0	0	0	
	4	7.70	8.40	10.3	8.2	512		5	5	7	5	5	
	5	8.12	8.53	9.7	9.0	499		8	8	10	6	9	
	6	7.93	8.40	9.6	8.5	514		14	8	14	10	0	
	7	—	8.46	—	8.1	564		3	10	0	0	14	
	8												
							Total=	30	23	31	21	28	Mean Neonates/Female = 26.6

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	7.74		10.3		834	0	0	0	0	0	22772
	1	7.93	8.65	9.7	8.1	809	0	0	0	0	0	22772
	2	7.89	8.69	9.8	8.7	816	0	0	0	0	0	22772
	3	7.86	8.60	9.8	7.3	802	0	0	0	0	0	22772
	4	7.67	8.59	11.1	8.1	801	1	0	2	3	1	22772
	5	7.93	8.62	10.4	9.3	795	7	4	8	5	6	22772
	6	7.82	8.57	10.6	8.3	808	0	0	0	0	0	22772
	7	—	8.60	—	7.6	888	7	6	13	9	10	—
	8											
							Total= 15	10	23	17	17	Mean Neonates/Female = 16.6

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 12/2/09

Project #: 15480 Test ID: 37046 Treatment: **pHi C18 SPE Elution** Control / Diluent: Lab Water

Centrifugation + C18 SPE Blank

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E
0	8.00		9.4		227	25.9	0	0	0	0	0
1	8.15	8.34	9.0	8.0	207	25.7	0	X/0	0	0	0
2	8.13	8.30	10.0	4.0	236	25.9	0	0	0	0	0
3	7.69	8.26	9.2	7.10	394	25.7	0	0	0	0	0
4	8.10	8.27	10.9	8.3	225	25.7	6	3	2	3	4
5	8.12	8.17	10.0	9.3	220	25.3/24.3	10	3	7	6	6
6	8.06	8.13	11.2	8.2	218	25.5	0	0	0	0	0
7	—	8.12	—	7.7	252	25.5	12	8	12	10	13
8											
						Total=	28	14	21	19	23

SIGN-OFF

Date: 12/2/09 New WQ: HV Test Init.: [illegible]
Sol'n Prep: PA Time: 1530

Date: 12/3/09 New WQ: SL Counts: [illegible]
Sol'n Prep: RA Old WQ: SL Time: 1300

Date: 12/4/09 New WQ: [illegible] Counts: [illegible]
Sol'n Prep: JL Old WQ: BH Time: 1515

Date: 12/5/09 New WQ: BH Counts: [illegible]
Sol'n Prep: JT Old WQ: BH Time: 1300

Date: 12/6/09 New WQ: SL Counts: JL
Sol'n Prep: PA Old WQ: BH Time: 1130

Date: 12/7/09 New WQ: SL Counts: RA
Sol'n Prep: PA Old WQ: Time: 1445

Date: 12/8/09 New WQ: [illegible] Counts: [illegible]
Sol'n Prep: [illegible] Old WQ: BH Time: 1620

Date: 12/9/09 New WQ: — Counts: RA
Sol'n Prep: [illegible] Old WQ: — Time: 1200

Date: New WQ: Counts:
Sol'n Prep: Old WQ: Time:

Mean Neonates/Female = 21.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 12/2/09

Project #: 15480 Test ID: 37046 Treatment: **pHi C18 SPE Elution** Control / Diluent: Lab Water

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
50%	0	8.05		9.3		229		0	0	0	0	0	
	1	8.20	8.27	9.1	7.8	209		0	0	0	0	0	
	2	8.18	8.22	10.0	8.9	227		0	0	0	0	0	
	3	7.82	8.21	9.4	7.1	212		0	0	0	0	0	
	4	7.89	8.13	10.3	8.0	239		4	4	5	3	3	
	5	8.17	8.13	10.0	8.4	217		8	6	7	7	9	
	6	8.06	8.05	9.8	7.9	221		8	0	0	0	0	
	7	—	8.11	—	7.7	235		0	7	12	14	17	
	8												
							Total=	20	17	24	24	29	Mean Neonates/Female = 22.8

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
100%	0	8.07		9.3		223	0	0	0	0	0	22772
	1	8.19	8.24	8.9	7.8	217	0	X/0	0	0	0	22772
	2	8.16	8.31	9.8	8.2	226	0	-	0	0	0	22772
	3	8.33	8.20	9.6	7.96	240	0	-	0	0	0	22772
	4	8.00	8.14	10.7	7.9	229	3	-	1	3	2	22772
	5	8.13	8.12	9.9	8.1	216	2	-	7	0	0	22772
	6	7.94	8.07	10.1	7.8	220	0	-	0	6	3	22772
	7	—	8.09	—	7.4	237	9	-	6	9	7	
	8							-				
							Total=	14	X/0	14	18	12	Mean Neonates/Female = 11.6

Appendix F

Test Data for the Evaluation of Recovery of C18 Column Eluate Toxicity to Fathead Minnows

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37045 Project #: 15480
Test Date: 12/2/09 Randomization: 3, 3, 1

Organism Log#: 4905 Age: 48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1261
Treatment: Baseline

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	25.9	8.42		9.3		410	5	5	5		Date 12/2/09
50%	25.9	8.07		9.6		605	5	5	5		Test Solution Prep PA
100%	25.9	7.81		10.3		805	5	5	5		New WQ SL
											Initiation Time 1615
											Initiation Signoff JT
											Sample ID 22772
Meter ID	33A	PH12		RDO2		EC05					
Lab Water Control	25.8	7.97	7.77 8.58	9.3	8.1	385	5	5	5		Date 12/3/09
50%	25.8	7.75	8.20	9.4	7.9	584	5	5	5		Test Solution Prep PA
100%	25.8	7.61	8.46	10.4	8.6	806	5	5	5		New WQ SL
											Renewal Time 1100
											Renewal Signoff JT
											Old WQ SG 22772
Meter ID	32A	PH12	PH12	RDO3	RDO3	EC04					
Lab Water Control	25.7	8.06	7.80	9.4	7.8	387	5	5	5		Date 12/4/09
50%	25.7	8.03	8.23	9.7	8.0	606	5	4	5		Test Solution Prep Sample ID: 22772 JL
100%	25.7	7.92	8.51	10.0	8.0	819	5	5	5		New WQ YL
											Renewal Time 1515
											Renewal Signoff JT
											Old WQ SG
Meter ID	33A	PH12	PH12	RDO1	RDO1	EC03					
Lab Water Control	25.7	7.81	7.73	9.2	8.2	400	4	5	5		Date 12/5/09
50%	25.7	7.67	8.28	9.8	8.2	597	5	4	5		Test Solution Prep 22772 JT
100%	25.7	7.54	8.47	11.1	8.3	900	5	5	5		New WQ BH
											Renewal Time 1035
											Renewal Signoff Bm
											Old WQ BH SG
Meter ID	33A	PH12	PH12	RDO3	RDO3	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 37045 Project #: 15480
Test Date: 12/2/09 Randomization: 3.3.1

Organism Log#: 4905 Age: <48 hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1261
Treatment: Baseline

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Water Control	25.1	7.79	7.88	9.5	8.5	377	3	5	4		Date 12/6/09
50%	25.1	7.71	8.34	9.6	8.4	595	5	4	5		Test Solution Prep PA
100%	25.1	7.67	8.64	10.7	8.5	801	5	4	4		New WQ SL
											Renewal Time 1000
											Renewal Signoff JPW
											Old WQ BH
Meter ID	33A	pH12	pH12	RDO1	RDO3	EC04					
Lab Water Control	25.6	8.04	7.69	9.4	7.7	373	3	5	4		Date 12/7/09
50%	25.6	7.92	8.25	9.3	7.6	583	5	4	5		Test Solution Prep PA
100%	25.6	7.83	8.49	10.1	7.7	805	3	1	1		New WQ SL
											Renewal Time 1310
											Renewal Signoff
											Old WQ NVS
Meter ID	33A	pH12	pH 14	RDO3	RDO1	EC05					
Lab Water Control	25.5	8.34	7.64	9.2	8.4	344	3	5	4		Date 12/8/09
50%	25.5	8.05	8.16	9.9	7.9	566	5	4	5		Test Solution Prep
100%	25.5	~~pH 7.86~~ pH14	8.52	~~EC1.3~~ RDO3	8.1	~~Ec03~~ EC05 813	3	1	1		New WQ SC
											Renewal Time 1215
											Renewal Signoff KQ
											Old WQ KQ
Meter ID	33A	pH14	pH12	RDO3	RDO2	EC03					
Lab Water Control	25.5		7.87		8.4	361	3	5	4		Date 12/9/09
50%	25.5		8.30		8.6	586	5	3	5		Termination Time 0840
100%	25.5		8.52		8.6	831	3	0	1		Termination Signoff PA
											Old WQ NVS
Meter ID	33A		pH09		RDO3	Ec 03					

Larval Fathead Minnow Biomass Value (Dry Weight) Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: ~~36426~~ 37045

Test Initiation Date: 12/2/09
Tare Weight Date: 12/6/09
Final Weight Date: 12/15/09

Test Species: *Pimephales promelas*
Sign-off: SL
Sign-off: FOUR

Pan ID	Treatment/ Replicate	Initial Weight (mg)	Final Weight (mg)	# of Organisms at Test Initiation	Biomass Value (mg)
1	Blank A	143.43	144.62	5	0.238
2	B	143.02	145.11	5	0.418
3	C	177.43	178.95	5	0.304
4	50% A	146.19	147.65	5	0.292
5	B	151.02	152.02	5	0.200
6	C	173.63	174.95	5	0.264
7	100% A	145.43	146.02	5	0.118
8	B	165.04	—	5	0
9	C	177.66	177.89	5	0.230
QA1		157.81	157.80		
QA2			—		
Balance ID		#1	#1		

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 12/2/09 Randomization: 3.3.2

Organism Log#: 4905 Age: < 48 hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1261
Treatment: pHi C18 SPE Elution

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.9	8.30		9.3		217	5	5	5		Date 12/2/09
50%	25.9	8.29		9.2		309	5	5	5		Test Solution Prep PA
100%	25.9	8.18		9.2		215	5	5	5		New WQ SL
											Initiation Time 1615
											Initiation Signoff JT
											Sample ID 22772
Meter ID	33A	PHR		RD02		EC05					
Blank	25.8	8.07	8.12	9.6	7.8	212	5	5	5		Date 12/3/09
50%	25.8	8.10	8.06	9.7	8.4	298	5	5	5		Test Solution Prep PA
100%	25.8	8.02	8.06	9.7	7.9	216	5	5	5		New WQ SL
											Renewal Time 1100
											Renewal Signoff JT
											Old WQ SL 22772
Meter ID	33A	PHR	PH12	RD03	RD03	EC04					
Blank	25.7	8.24	8.11	9.9	7.3	212	5	5	5		Date 12/4/09
50%	25.7	8.18	7.87	9.8	7.3	300	5	5	4		Test Solution Prep SL Spike ID: 22772
100%	25.7	8.26	8.16	9.7	8.2	216	5	5	5		New WQ SL
											Renewal Time 1515
											Renewal Signoff JT
											Old WQ SG
Meter ID	33A	PH12	PH12	RD01	RD01	EC03					
Blank	25.7	8.12	7.94	10.3	6.7	210	5	5	5		Date 12/5/09
50%	25.7	7.98	7.75	9.9	6.6	300	5	5	4		Test Solution Prep 22772 JT
100%	25.7	8.03	7.85	10.2	6.4	211	34 5 Year	5	4		New WQ BH
											Renewal Time 1115
											Renewal Signoff SG
											Old WQ SG
Meter ID	33A	PH14	PH14	RD03	RD03	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426 Project #: 15239
Test Date: 12/2/09 Randomization: 3-3-2

Organism Log#: 4905 Age: <48hrs
Organism Supplier: ABS
Control/Diluent: EPAMH
Control Water Batch: 1261
Treatment: pHi C18 SPE Elution

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.1	8.07	8.04	10.5	7.1	209	5	5	5		Date 12/6/09
50%	25.1	8.02	7.91	10.7	7.3	297	5	5	4		Test Solution Prep PA
100%	25.1	8.09	7.95	10.9	7.0	215	2	2	4		New WQ SL
											Renewal Time 1000
											Renewal Signoff JPW
											Old WQ RH
Meter ID	33A	pH12	pH12	RD01	RP03	EC04					
Blank	26.6	7.91	7.81	9.2	6.0	215	5	5	5		Date 12/7/09
50%	25.6	8.13	7.69	10.0	6.4	298	4	5	4		Test Solution Prep PA
100%	25.6	9.16	7.81	10.3	5.4	214	1	0	4		New WQ SL
											Renewal Time 1310
											Renewal Signoff JW
											Old WQ NVS
Meter ID	33A	pH12	pH 14	RD03	RD01	EC05					
Blank	25.5	8.14	8.04	11.3	7.4	208	5	5	5		Date 12/08/09
50%	25.5	8.11	7.91	10.1	7.4	271	4	4	3		Test Solution Prep AM
100%	25.5	8.03	7.87	10.2	7.2	215	0	–	1		New WQ SG
											Renewal Time 1215
											Renewal Signoff KQ
											Old WQ KQ
Meter ID	33A	pH14	pH12	RD03	RD02	EC03					
Blank	25.5		8.09		8.4	219	5	5	5		Date 12/9/09
50%	25.5		7.88		8.0	286	4	4	3		Termination Time 0840
100%	25.5		7.96		7.9	224	0	–	1		Termination Signoff PA
											Old WQ NVS
Meter ID	33A		pH09		RD03	EC03					

Larval Fathead Minnow Biomass Value (Dry Weight) Data

Client: Precision Analytical
Test Material: Inlet to Res B
Test ID#: 36426
Test Initiation Date: 12/2/09
Tare Weight Date: 12/6/09
Final Weight Date: 12/17/09
Test Species: *Pimephales promelas*
Sign-off:
Sign-off:

Pan ID	Treatment/ Replicate	Initial Weight (mg)	Final Weight (mg)	# of Organisms at Test Initiation	Biomass Value (mg)
1	Blank A	161.79	163.87	5	0.416
2	B	140.88	142.79	5	0.382
3	C	168.20	170.22	5	0.404
4	50% A	159.71	160.60	5	0.178
5	B	167.163	168.68	5	0.210
6	C	179.38	180.40	5	0.204
7	100% A	151.23	—	5	0
8	B	169.02	—	5	0
9	C	177.05	177.33	5	0.280
QA1		139.13	139.03		
QA2		—	—		
Balance ID		#1	#1		

Appendix G

Test Data for the Evaluation of the Recovery of Sequential C18 Column Elutions Toxicity to *Ceriodaphnia dubia*

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: Inlet to Res B Test Date: 1/8/10

Project #: 15593 Test ID: 37342 Treatment: Lab Water Control Control / Diluent: 80:20

Lab Water Control

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	SIGN-OFF
0	7.66		9.6		283	25.0	0	0	0	0	0	Date: 1/8/10 New WQ: [illegible] Test Init.: [illegible] Sol'n Prep: Time: 1820
1	8.14	8.24	8.9	8.6	281	25.5	0	0	0	0	0	Date: 1/9/10 New WQ: BH Counts: TT Sol'n Prep: SK Old WQ: [illegible] Time: 1530
2	8.11	8.35	9.3	7.5	207	25.3	0	0	0	0	0	Date: 1/10/10 New WQ: SK Counts: PA Sol'n Prep: PA Old WQ: NV3 Time: [illegible]
3	8.17	8.18	9.2	8.4	236	25.5	0	0	0	0	0	Date: 1/11/10 New WQ: [illegible] Counts: [illegible] Sol'n Prep: PA Old WQ: [illegible] Time: 1620
4	8.02	8.02	8.5	8.2	233	26.3	0	5	5	6	5	Date: 1/12/10 New WQ: [illegible] Counts: [illegible] Sol'n Prep: [illegible] Old WQ: [illegible] Time: 1330
5	7.97	8.26	8.7	7.9	221	25.3	6	8	0	0	0	Date: 1/13/10 New WQ: [illegible] Counts: [illegible] Sol'n Prep: PA Old WQ: [illegible] Time: 1330
6	7.63	8.42	9.2	8.2	221	25.4	0	0	8	3	6	Date: 1/14/10 New WQ: PA Counts: [illegible] Sol'n Prep: PA Old WQ: HV Time: 1330
7	—	8.18	—	7.6	229	25.1	0	11	15	11	16	Date: 1/15/10 New WQ: — Counts: [illegible] Sol'n Prep: — Old WQ: SK Time: 1500
8												Date: New WQ: Counts: Sol'n Prep: Old WQ: Time:
						Total =	6	24	28	20	27	Mean Neonates/Female = 21

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Test ID: 37342 Fraction: **50% MeOH** Control / Diluent: 80:20

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
Blank	0	7.66		9.6		222		0	0	0	0	0	
	1	8.01	8.22	9.0	8.7	220		0	0	0	0	0	
	2	7.87	~~8.35~~ 7.85	10.0	8.0	206		0	0	0	0	0	
	3	8.12	8.22	9.8	8.1	222		0	0	0	0	0	
	4	7.97	8.13	9.1	8.4	230		0	4	6	5	5	
	5	7.95	8.44	9.8	7.5	217		5	8	0	7	5	
	6	7.72	8.43	9.5	8.6	219		12	0	6	6	0	
	7	—	8.18	—	7.5	229		0	11	11	9	14	
	8												
							Total=	17	23	23	21	24	Mean Neonates/Female = 21.6

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
IX	0	7.58		9.6		223	0	0	0	0	0	22772
	1	8.04	8.20	8.9	8.6	220	0	0	0	0	0	22772
	2	7.87	8.34	9.3	8.1	207	0	0	0	0	0	22772
	3	8.14	8.19	9.5	7.9	224	0	0	0	0	0	22772
	4	7.98	8.11	8.7	8.3	229	2	4	8	4	5	22772
	5	7.97	8.53	9.7	7.8	220	0	6	~~8~~ 4	12	7	22772
	6	7.79	8.49	10.2	8.7	219	14	0	X/1	6	0	22772
	7	—	8.20	—	7.7	230	19	16	—	0	14	—
	8								—			
							Total=	35	26	X/11	22	20	Mean Neonates/Female = 24

normalized = 27.25

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Fraction: 37342 Treatment: **50% MeOH** Control / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
2X	0	7.59		9.6		224		0	0	0	0	0	
	1	7.99	8.17	8.9	8.2	222		0	0	0	0	0	
	2	7.98	8.32	9.6	8.0	203		0	0	0	0	0	
	3	8.11	8.15	9.5	7.7	219		0	0	0	0	0	
	4	7.94	8.11	8.6	8.1	230		5	7	6	5	4	
	5	7.95	8.52	9.4	7.5	223		12	7	8	12	10	
	6	7.76	8.51	9.9	8.8	217		7	0	0	6	0	
	7	–	8.22	–	7.7	225		0	12	11	0	15	
	8												
							Total=	24	26	25	23	29	Mean Neonates/Female = 25.4

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		Survival / Reproduction A	B	C	D	E	SAMPLE ID
4X	0	7.62		9.6		225		0	0	0	0	0	22772
	1	7.91	8.18	9.1	8.2	224		0	0	0	0	0	22772
	2	7.87	8.33	9.8	8.2	207		0	0	0	0	0	22772
	3	8.03	8.19	9.8	7.7	226		0	0	0	0	0	22772
	4	7.88	8.15	8.8	8.3	232		0	6	6	6	4	22772
	5	7.90	8.62	9.7	7.5	218		4	6	9	8	8	22772
	6	7.70	8.52	9.9	8.8	224		7	0	0	0	0	22772
	7	–	8.24	–	8.1	235		16	10	11	9	10	–
	8												
							Total=	27	22	26	23	25	Mean Neonates/Female = 24.6

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Test ID: 37342 Fraction: **75% MeOH** Control / Diluent: 80:20

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
Blank	0	7.70		9.6		217		0	0	0	0	0	
	1	7.98	8.20	9.2	8.7	219		0	0	0	0	0	
	2	7.80	8.34	10.1	8.5	200		0	0	0	0	0	
	3	8.03	8.23	10.0	8.0	228		0	0	6	0	0	
	4	7.95	8.22	9.2	8.9	223		4	6	0	0	5	
	5	7.92	8.51	9.9	7.6	223		0	0	6	2	0	
	6	7.84	6.42	10.7	8.4	218		8	5	12	10	3	
	7	—	8.19	—	7.6	227		11	11	0	0	5	
	8												
							Total=	23	22	24	12	13	Mean Neonates/Female = 18.8

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
1X	0	7.59		9.6		222	0	0	0	0	0	22772
	1	8.02	8.20	9.0	8.5	218	0	0	0	0	0	22772
	2	7.94	8.29	10.0	8.0	204	0	0	0	0	0	22772
	3	8.09	8.19	9.5	8.0	222	0	0	0	0	0	22772
	4	7.95	8.21	8.8	8.8	227	2	7	0	0	6	22772
	5	7.95	8.46	10.0	6.8	226	11	9	7	7	6	22772
	6	7.77	6.48	10.0	8.4	216	0	0	11	9	0	22772
	7	—	8.14	—	7.7	221	11	14	18	14	13	—
	8											
							Total=	24	30	36	30	25	Mean Neonates/Female = 29.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: Inlet to Res B Test Date: 1/8/10

Project #: 15593 Fraction: 37342 Treatment: 75% MeOH Control / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
2X	0	7.59		9.6		220		0	0	0	0	0	
	1	7.97	8.20	8.9	8.3	218		0	0	0	0	0	
	2	7.87	8.28	9.9	7.8	202		0	0	0	0	0	
	3	8.06	8.15	9.6	7.7	222		0	0	0	0	0	
	4	7.93	8.21	8.7	8.6	228		4	7	0	0	5	
	5	7.86	8.41	9.8	6.9	223		10	10	7	7	8	
	6	7.69	6.58	9.2	8.8	216		12	0	11	12	0	
	7	–	8.11	–	7.2	221		0	12	19	20	13	
	8												
							Total=	26	29	37	39	26	Mean Neonates/Female = 31.4

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
4X	0	7.62		9.9		220	0	0	0	0	0	22772
	1	7.84	8.19	9.1	8.2	220	0	0	0	0	0	22772
	2	7.77	8.31	10.1	8.0	203	0	0	0	0	0	22772
	3	8.00	8.19	9.9	7.8	222	0	0	0	0	0	22772
	4	7.91	8.20	8.8	8.6	225	5	5	0	0	5	22772
	5	7.90	8.43	9.4	7.1	250	~~10~~ 4	~~12~~ 7	~~7~~ 5	5	9	22772
	6	7.66	6.66	9.8	8.8	222	0	0	4	7	0	22772
	7	–	8.15	–	7.4	227	10	11	8	0	0	–
	8											
							Total= 19	23	17	12	14	Mean Neonates/Female = 17.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Test ID: 37342 Fraction: **80% MeOH** Control / Diluent: 80:20

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
Blank	0	7.67		9.8		211		0	0	0	0	0	
	1	7.95	8.21	9.1	8.9	217		0	0	0	0	0	
	2	7.76	8.18	10.3	8.7	202		0	0	0	0	0	
	3	8.01	8.18	10.3	8.5	219		0	0	0	0	0	
	4	7.91	8.25	9.3	8.6	226		5	4	5	5	5	
	5	7.95	8.13	9.8	8.7	239		0	0	0	0	0	
	6	7.80	8.26	10.3	8.5	217		6	6	X/9	8	X/0	
	7	—	8.23	—	7.9	228		14	11	—	10	—	
	8									—		—	normalized = 23.0
							Total=	25	21	X/14	23	X/5	Mean Neonates/Female = 17.6

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
IX	0	7.60		9.7		222	0	0	0	0	0	22772
	1	8.01	8.21	9.0	8.7	218	0	0	0	0	0	22772
	2	7.90	8.12	9.9	8.3	212	0	0	0	0	0	22772
	3	8.06	8.19	9.7	8.3	220	0	0	0	6	0	22772
	4	7.95	8.13	9.0	8.2	226	5	5	5	5	5	22772
	5	7.98	8.19	9.2	8.4	231	0	8	3	0	8	22772
	6	7.80	8.26	9.9	8.6	217	~~8~~ 7	~~8~~ 9	0	~~8~~ 10	0	22772
	7	—	8.20	—	8.0	224	16	13	12	16*	12	—
	8											
							Total= 28	26	20	24	25	Mean Neonates/Female = 24.6

* 4th brood

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Fraction: 37342 Treatment: **80% MeOH** Control / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
2X	0	7.60		9.6		223		0	0	0	0	0	
	1	7.95	8.21	8.9	8.4	219		0	0	0	0	0	
	2	7.87	8.04	9.9	8.2	204		0	0	0	0	0	
	3	8.03	8.18	9.6	8.0	221		0	0	0	0	0	
	4	7.96	8.07	9.3	8.2	222		4	5	4	5	5	
	5	7.96	8.26	9.2	8.5	220		9	5	5	1	4	
	6	7.69	8.26	9.6	8.4	218		0	0	1	8	0	
	7	–	8.19	–	7.9	224		12	12	12	12	12	
	8												
							Total=	25	22	22	26	21	Mean Neonates/Female = 23.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
4X	0	7.62		9.6		221	0	0	0	0	0	22772
	1	7.86	8.15	9.1	8.5	218	0	0	0	0	0	22772
	2	7.72	8.11	10.3	8.3	201	0	0	0	0	0	22772
	3	7.95	8.17	9.9	7.9	221	0	0	0	0	0	22772
	4	7.93	8.00	9.3	8.3	223	0	2	2	3	4	22772
	5	7.89	8.22	9.1	8.5	221	0	0	5	0	–	22772
	6	7.66	8.24	10.1	8.3	221	1	x/6	1	0	–	–
	7	–	8.17	–	4.8	228	x/0	–	x/0	0	–	
	8						–	–	–		–	
							Total= x/1	x/8	x/8	3	4	Mean Neonates/Female = 4.8

normalized = 3.0

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Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: Inlet to Res B Test Date: 1/8/10

Project #: 15593 Test ID: 37342 Fraction: 85% MeOH Control / Diluent: 80:20

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
Blank	0	7.65		9.2		235		0	0	0	0	0	
	1	7.95	8.22	9.1	8.5	217		0	0	0	0	0	
	2	7.77	8.17	10.3	8.1	201 ~~200~~		0	0	0	0	0	
	3	7.99	8.18	10.0	8.0	221		0	0	0	0	0	
	4	7.93	8.10	9.5	8.3	225		4	5	3	4	4	
	5	7.94	8.23	9.6	8.2	209		5	0	0	1	0	
	6	~~7.77~~	8.16	10.4	8.8	216		0	9	1	5	8	
	7	—	8.24	—	7.5	225		7	10	10	12	11	
	8												
							Total=	16	24	14	22	23	Mean Neonates/Female = 19.8

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
1X	0	7.56		9.3		226	0	0	0	0	0	22772
	1	8.02	8.20	9.0	8.9	219	0	0	0	0	0	22772
	2	7.95	8.08	9.9	8.4	205	0	0	0	0	0	22772
	3	8.12	8.19	9.5	8.0	231	0	0	0	0	0	22772
	4	~~8.02~~	8.04	9.2	~~8.0~~ 7.5	221	4	6	4	6	4	22772
	5	7.95	8.24	9.3	8.2	220	10	7	8	6	11	22772
	6	~~7.78~~	8.24	9.2	8.3	217	0	0	0	10	0	22772
	7	—	8.24	—	7.4	227	12	15	10	11	11	—
	8											
							Total= 26	28	22	27	26	Mean Neonates/Female = 25.8

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: Inlet to Res B Test Date: 11/8/10

Project #: 15593 Fraction: 37342 Treatment: 85% MeOH Control / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
2X	0	7.54		9.1		223		0	0	0	0	0	
	1	7.97	8.19	9.0	8.00	210		0	0	0	0	0	
	2	7.89	8.07	9.8	8.2	201		0	0	0	0	0	
	3	8.09	8.17	9.4	7.9	221		0	0	0	0	0	
	4	8.02	8.05	9.1	7.7	225		0	4	0	4	4	
	5	7.98	8.17	9.3	8.0	221		0	6	0	0	3	
	6	7.74	8.21	9.6	8.4	216		0	0	X/0	0	0	
	7	–	8.20	–	7.5	224		8	6	–	0	0	
	8									–			normalized = 8.75
							Total=	8	16	X/0	4	7	Mean Neonates/Female = 7.0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
4X	0	7.59		9.2		224	0	0	0	0	0	12772
	1	7.90	8.10	9.0	8.4	219	0	0	0	0	0	22772
	2	7.74	8.13	10.3	8.3	201	0	0	0	0	0	22772
	3	8.00	8.18	9.9	7.8	219	0	0	0	0	0	22772
	4	7.99	8.06	9.3	7.5	223	X/0	2	0	0	2	22772
	5	7.90	8.19	9.4	8.0	220	–	X/4	0	0	0	22772
	6	7.67	8.21	9.8	8.3	219	–	–	0	0	X/0	22772
	7	–	8.20	–	7.7	233	–	–	0	0	–	–
	8						–	–			–	
							Total= X/0	X/4	0	0	X/2	Mean Neonates/Female = 1.6

normalized = 0.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: Inlet to Res B Test Date: 1/8/10

Project #: 15593 Test ID: 37342 Fraction: 90% MeOH Control / Diluent: 80:20

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (μS/cm)	Temp (°C)	A	B	C	D	E	SAMPLE ID
Blank	0	7.60		9.1		221		0	0	0	0	0	
	1	7.96	8.19	9.0	9.7	217		0	0	0	0	0	
	2	7.73	8.21	10.3	8.4	201		0	0	0	0	0	
	3	7.99	8.28	9.8	7.7	225		0	0	0	0	0	
	4	8.20	8.05	9.6	8.9	224		3	5	4	x/5	4	
	5	7.98	8.18	9.6	8.6	218		0	0	1	-	6	
	6	7.87	8.23	10.6	8.9	218		6	8	0	-	7	
	7	—	8.18	—	7.4	269		6	11	x/11	-	1	
	8									—	-		normalized = 19.0
							Total=	15	24	x/16	x/5	18	Mean Neonates/Female = 15.6

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (μS/cm)		A	B	C	D	E	SAMPLE ID
IX	0	7.54		9.2		223		0	0	0	0	0	22772
	1	~~7.9~~ 8.00	8.22	~~9.1~~ 9.9	9.0	~~213~~ 217		0	0	0	0	0	22772
	2	7.90	8.13	10.2	7.9	203		0	0	0	0	0	22772
	3	8.06	8.20	9.6	6.8	221		0	0	0	0	0	22772
	4	8.16	8.07	8.8	8.5	207		5	5	6	5	3	22772
	5	8.01	8.08	9.0	8.0	215		0	5	8	5	0	22772
	6	7.75	8.22	9.7	8.6	215		8	0	0	1	x/0	22772
	7	—	8.28	—	7.8	224		10	14	12	0	—	—
	8												
							Total=	23	24	26	11	x/3	Mean Neonates/Female = 17.4

normalized = 21.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: Precision Analytical - Chevron Cawelo Sample ID: Inlet to Res B Test Date: 1/8/10

Project #: 15593 Fraction: 37342 Treatment: 90% MeOH Control / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
2X	0	7.55		9.1		224		0	0	0	0	0	
	1	7.99	8.21	8.9	8.7	216		0	0	0	0	0	
	2	7.86	8.11	9.8	7.8	202		0	0	0	0	0	
	3	8.05	8.19	9.6	6.2	222		0	0	0	0	0	
	4	8.10	8.06	9.1	8.8	224		4	5	6	M/5	0	
	5	7.97	8.17	8.9	8.3	255		5	7	1	-	0	
	6	7.71	8.22	9.60	8.5	216		0	0	0	-	0	
	7	—	8.19	—	7.9	223		10	9	12	-	0	
	8										-		normalized = 19.7
							Total=	19	21	19	M/5	0♂	Mean Neonates/Female = 16.0

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
4X	0	7.58		9.1		222	0	0	0	0	0	22772
	1	7.94	8.22	9.0	8.9	214	0	0	0	0	0	22772
	2	7.77	8.18	10.1	8.3	200	0	0	0	0	0	22772
	3	7.99	8.26	10.0	7.4	214	0	0	0	0	0	22772
	4	8.09	8.10	9.5	8.4	223	0	3	3	M/0	0	22772
	5	7.90	8.21	9.3	8.4	241	0	0	6	-	0	22772
	6	7.67	8.25	10.2	8.5	219	M/0	5	0	-	M/0	22772
	7	—	8.15	—	7.9	226	-	0	0	-	-	—
	8						-			-	-	
							Total= M/0	8	9	M/0	M/0	Mean Neonates/Female = 3.4

♂= male & remove from reproduction stats

normalized = 8.5

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Test ID: 37342 Fraction: **95% MeOH** Control / Diluent: 80:20

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
Blank	0	7.57		8.9		220		0	0	0	0	0	
	1	7.95	8.21	9.2	8.1	217		0	0	0	0	0	
	2	7.75	8.11	10.2	8.4	199		0	0	0	0	0	
	3	7.96	8.32	10.1	7.1	222		0	0	0	0	0	
	4	8.02	8.18	9.6	8.9	224		4	5	4	4	3	
	5	7.95	8.18	9.8	8.2	216		3	7	0	0	0	
	6	7.85	8.21	10.4	8.5	217		9	0	7	9	9	
	7	—	8.26	—	8.2	229		0	12	x/8	11	1	
	8												normalized = 10.25
							Total=	16	24	x/19	24	13	Mean Neonates/Female = 19.2

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
IX	0	7.55		8.9		224	0	0	0	0	0	22772
	1	8.13	8.24	9.1	8.90	214	0	0	0	0	0	22772
	2	7.89	8.10	9.7	8.1	203	0	0	0	0	0	R2772
	3	8.03	8.17	9.9	6.0	222	0	0	0	6	1	22772
	4	8.06	8.19	9.0	8.8	224	3	5	3	6	6	22772
	5	7.99	8.14	9.8	7.9	220	5	8	6	0	8	22772
	6	7.91	8.11	9.7	8.4	216	8	0	0	7	0	22772
	7	—	8.28	—	8.1	223	0	13	10	10	12	—
	8											
							Total=	16	26	19	23	26	Mean Neonates/Female = 22.0

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Fraction: 37342 Treatment: **95% MeOH** Control / Diluent: Lab Water (80:20)

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	SAMPLE ID
2X	0	7.55		8.9		222		0	0	0	0	0	
	1	8.00	8.25	9.1	8.8	217		0	0	0	0	0	
	2	7.92	8.10	9.7	9.2	~~220~~ 201.4		0	0	0	0	0	
	3	8.09	8.24	9.6	6.8	222		0	0	0	0	0	
	4	8.06	8.19	9.1	8.6	225		4	6	3	4	3	
	5	7.98	8.22	9.3	8.1	225		X/0	0	8	6	9	
	6	7.73	8.16	9.5	8.4	213		–	0	0	0	0	
	7	–	8.21	–	7.9	217		–	0	13	9	12	
	8							–					normalized = 18.25
							Total=	X/4	6	24	19	24	Mean Neonates/Female = 15.4

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		A	B	C	D	E	SAMPLE ID
4X	0	7.62		9.0		220		0	0	0	0	0	22772
	1	8.04	8.26	9.2	8.9	216		0	0	0	0	0	22772
	2	7.81	~~8.10~~ 8.40	10.1	8.2 8.3	207		0	0	0	0	0	22772
	3	8.08	8.23	10.0	6.8	219		0	0	0	0	0	22772
	4	7.97	8.20	9.5	8.6	224		3	0	3	2	2	22772
	5	7.93	8.20	9.6	8.1	220		X/0	0	~~8~~ 0	~~6~~ 0	~~9~~ 0	22772
	6	7.71	8.21	9.7	8.4	219		1/0	0	0	6	5	22772
	7	–	8.23	–	7.6	224		1/10	0	4	9	0	–
	8							1/					
							Total=	~~X/3~~ 13	0 ♂	11	17	7	Mean Neonates/Female = ~~9.5~~ 12.0

♂ = male, remove from reproduction stats

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Test ID: 37342 Fraction: **100% MeOH** Control / Diluent: 80:20

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
Blank	0	7.54		9.0		221		0	0	0	0	0	
	1	8.01	8.22	9.1	8.7	217		0	0	0	0	0	
	2	7.80	8.33	10.2	6.7	207		0	0	0	0	0	
	3	7.88	8.21	10.1	8.6	224		0	0	0	0	0	
	4	7.82	8.05	9.8	8.5	219		4	4	5	6	5	
	5	7.94	8.15	9.9	6.8	215		5	4	0	7	0	
	6	7.76	8.05	10.2	8.8	218		0	0	1	0	8	
	7	-	8.33	-	5.4	231		7	5	10	6	9	
	8												
							Total=	16	13	16	19	13	Mean Neonates/Female = 15.4

	Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Survival / Reproduction A	B	C	D	E	SAMPLE ID
IX	0	7.59		9.1		224	0	0	0	0	0	22772
	1	8.11	8.21	9.1	8.9	218	0	0	0	0	0	22772
	2	7.93	8.31	10.0	7.3	206	0	0	0	0	0	22772
	3	8.03	8.23	9.6	8.0	223	0	0	0	0	0	22772
	4	7.98	8.02	9.5	8.3	224	6	5	4	6	5	22772
	5	7.99	8.13	9.3	6.7	221	10	8	7	10	8	22772
	6	7.81	8.12	10.0	8.7	216	0	0	1	0	0	22772
	7	-	8.21	-	4.5	224	12	13	10	X/7	11	-
	8									-		
							Total=	28	26	22	X/33	24	Mean Neonates/Female = 24.6

normalized = 25.0

Pacific EcoRisk — Environmental Consulting and Testing

Short-Term Chronic 3-Brood *Ceriodaphnia dubia* Survival & Reproduction Test Data

Client: **Precision Analytical - Chevron Cawelo** Sample ID: **Inlet to Res B** Test Date: 1/8/10

Project #: 15593 Fraction: 37342 Treatment: **100% MeOH** Control / Diluent: Lab Water (80:20)

2X

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)	Temp (°C)	A	B	C	D	E	SAMPLE ID
0	7.55		9.3		222		0	0	0	0	0	
1	8.10	8.20	9.1	8.80	218		0	0	0	0	0	
2	7.93	8.32	9.8	7.2	202		O	O	O	O	O	
3	8.05	8.23	9.6	7.9	219		O	O	O	O	O	
4	7.92	8.04	9.3	8.3	227		5	6	4	5	6	
5	7.98	8.08	9.2	6.6	208		9	7	6	4	9	
6	7.78	8.19	9.6	8.2	218		0	0	0	0	0	
7	—	8.21	—	6.9	225		9	11	8	11	11	
8												
						Total=	23	24	18	20	26	Mean Neonates/Female = 22.2

4X

Day	pH New	pH Old	D.O. New	D.O. Old	Cond. (µS/cm)		A	B	C	D	E	SAMPLE ID
0	7.50		9.3		221		0	0	0	0	0	22772
1	~~8.16~~ 8.05 BH	~~8.20~~ 8.24 BH	~~9.1~~ 9.2 BH	~~8.80~~ 8.85 BH	~~210~~ 219 BH		0	0	0	0	0	22772
2	7.82	8.32	10.1	7.5	200		O	O	O	O	O	22772
3	8.01	8.26	9.9	7.9	219		O	O	O	O	O	22772
4	7.84	8.12	9.8	8.5	223		5	4	4	5	5	22772
5	7.92	8.07	9.6	6.6	217		0	0	0	7	0	22772
6	7.73	8.21	9.8	8.8	219		5	4	x/6	0	7	22772
7	—	8.19	—	7.5	235		0	0	–	8	2	–
8									–			
						Total=	10	8	x/10	20	14	Mean Neonates/Female = 12.4

normalized = 13.0

Appendix H

Test Data for the Evaluation of the Recovery of Sequential C18 Column Elutions Toxicity to Fathead Minnows

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1/14/10 Randomization: ~

Organism Log#: 4996 Age: <48
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: Lab Water Controls

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	SIGN-OFF
Lab Control	25.5	6.97		8.8		311	5	5	-	Date: 1/14/10
80:20 (Perrier)	25.5	7.01		9.0		228	5	5	-	Test Solution Prep: PA
80:20 (Evian)	25.5	6.92		9.2		214	5	5	-	New WQ: PA
Hard Water	25.5	7.16		8.8		628	5	5	-	Initiation Time: 1710
Very Hard Water	25.5	7.73		8.9		908	5	5	-	Initiation Signoff: PA
										Sample ID: — ~~2222~~ PA
Meter ID	33A	PH03		RD02		EC04				
Lab Control	25.5	8.15	8.11	8.2	8.2	322	5	5	-	Date: 1/15/10
80:20 (Perrier)	25.5	8.22	8.19	9.3	7.8	212	5	5	-	Test Solution Prep: NM
80:20 (Evian)	25.5	8.24	8.22	9.2	7.9	215	5	5	-	New WQ: SG
Hard Water	25.5	8.36	8.38	9.8	8.0	632	5	5	-	Renewal Time: 1430
Very Hard Water	25.5	8.53	8.52	9.8	8.0	919	5	5	-	Renewal Signoff: MM
										Old WQ: JT
Meter ID	33A	PH12	PH09	RD03	RD01	EC04				
Lab Control	25.0	7.85	8.04	9.8	8.8	313	5	5	-	Date: 1/16/10
80:20 (Perrier)	25.0	8.12	8.04	10.0	8.6	209	5	4	-	Test Solution Prep: SH
80:20 (Evian)	25.0	8.14	8.04	10.0	8.3	215	5	5	-	New WQ: SH
Hard Water	25.0	8.30	8.25	10.3	8.5	633	5	5	-	Renewal Time: 1130
Very Hard Water	25.0	8.44	8.44	10.7	8.8	915	5	5	-	Renewal Signoff: JPL
										Old WQ: JT
Meter ID	33A	PH12	PH12	RD01	RD01	EC04				
Lab Control	25.1	8.10	7.89	8.8	7.5	302	5	5	-	Date: 1/17/10
80:20 (Perrier)	25.1	8.22	7.89	9.0	7.1	207	5	4	-	Test Solution Prep: JPL
80:20 (Evian)	25.1	8.18	7.82	9.7	6.7	213	5	5	-	New WQ: SG
Hard Water	25.1	~~8.36~~ 8.47	8.13	~~9.7~~ 9.4	6.8	~~638~~ 885	5	5	-	Renewal Time: 1130
Very Hard Water	25.1	~~8.47~~ ~~8.36~~ 8.39		9.9	7.2	885	5	5	-	Renewal Signoff: JPL
										Old WQ: SG
Meter ID	33A	PH14	PH14	RD02	RD02	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical**
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1.14.10 Randomization: –

Organism Log#: 4996 Age: <48 hrs
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: Lab Water Controls

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Lab Control	25.4	8.39	7.77	8.9	7.5	~~390~~ 321	5	5	-		Date: 1/18/10
80:20 (Perrier)	25.4	8.26	7.85	8.8	7.4	213	5	4	-		Test Solution Prep: PA
80:20 (Evian)	25.4	8.28	7.88	9.0	7.5	215	5	5	-		New WQ: JC
Hard Water	25.4	8.32	8.06	9.3	7.3	619	5	5	-		Renewal Time: 1315
Very Hard Water	25.4	8.44	8.29	9.6	7.3	884	5	5	-		Renewal Signoff: PA
											Old WQ: HV
Meter ID	33A	PH12	PH09	RD01	RD03	EC03					
Lab Control	25.7	–	–	–	–	–	5	5	-		Date: 1/19/10
80:20 (Perrier)	25.7	–	–	–	–	–	4	4	-		Test Solution Prep: ~~JPC~~ –
80:20 (Evian)	25.7	–	–	–	–	–	5	5	-		New WQ: –
Hard Water	25.7	–	–	–	–	–	5	5	-		Renewal Time: 1130
Very Hard Water	25.7	–	–	–	–	–	5	5	-		Renewal Signoff: JPC
											Old WQ: –
Meter ID	33A	–	–	–	–	–					
Lab Control	25.5	–	–	–	–	–	5	5	-		Date: 1/20/10
80:20 (Perrier)	25.5	–	–	–	–	–	4	4	-		Test Solution Prep: –
80:20 (Evian)	25.5	–	–	–	–	–	4	4	-		New WQ: –
Hard Water	25.5	–	–	–	–	–	5	5	-		Renewal Time: 0845
Very Hard Water	25.5	–	–	–	–	–	5	5	-		Renewal Signoff: JPC
											Old WQ: –
Meter ID	33A	–	–	–	–	–					
Lab Control	25.7		7.10		6.8	2239	5	5	-		Date: 1/21/10
80:20 (Perrier)	25.7		7.87		8.0	239	3	3	-		Termination Time: ~~0922~~ 1413
80:20 (Evian)	25.7		7.75		6.0	240	4	4	-		Termination Signoff: SC
Hard Water	25.7		7.94		6.1	696	5	5	-		Old WQ: EKA
Very Hard Water	25.7		8.26		6.4	1018	5	5	-		
Meter ID	33A		PH09		RD01	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical** Organism Log#: 4996 Age: <48h

Test Material: 8/31/09 Inlet to Res B Organism Supplier: Chesapeake

Test ID#: 37393 Project #: 15593 Control/Diluent: EPAMH

Test Date: 1/14/10 Randomization: — Control Water Batch: P276

Fraction: 50% MeOH

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	SIGN-OFF
Blank	25.5	7.85		8.7		298	5	5	-	Date: 1/14/10
1X	25.5	7.92		8.9		~~273~~ 291	5	5	-	Test Solution Prep: PA
2X	25.5	7.63		8.6		263	5	5	-	New WQ: PA
4X	25.5	7.48		8.9		223	5	5	-	Initiation Time: 1310
										Initiation Signoff: PA
										Sample ID: 22772
Meter ID	33A	PH03		RD02		EC04				
Blank	25.5	8.23	8.01	9.6	7.9	322	5	5	-	Date: 1/15/10
1X	25.5	8.16	8.12	9.3	8.1	291	5	5	-	Test Solution Prep: KB
2X	25.5	8.10	8.12	9.4	7.8	270	5	5	-	New WQ: SG
4X	25.5	8.05	8.16	9.8	7.8	228	5	5	-	Renewal Time: 1430
										Renewal Signoff: MM
										Old WQ: TT
Meter ID	33A	PH12	PH09	RD03	RD01	EC04				
Blank	25.0	8.02	8.12	11.0	8.8	305	5	5	-	Date: 1/16/10
1X	25.0	7.95	8.04	11.1	8.7	290	5	5	-	Test Solution Prep: SH
2X	25.0	7.94	8.01	10.2	8.4	264	5	4	-	New WQ: SH
4X	25.0	7.90	8.05	11.0	8.4	222	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPL
										Old WQ: JT
Meter ID	33A	PH12	PH12	RD01	RD01	EC04				
Blank	25.1	8.15	8.05	9.9	7.4	310	5	5	-	Date: 1/17/10
1X	25.1	8.02	7.91	9.7	6.7	283	5	5	-	Test Solution Prep: JPL
2X	25.1	8.02	7.84	9.7	6.7	260	5	4	-	New WQ: SG
4X	25.1	8.00	7.82	9.9	6.3	219	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPL
										Old WQ: SG
Meter ID	33A	PH10	PH10	RD02	RD02	EC03				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical**
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1-14-10 Randomization: –

Organism Log#: 4996 Age: <48hrs
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 50% MeOH

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	#Live Organisms A	B	C	D	SIGN-OFF
Blank	25.7	8.45	7.85	10.0	7.4	293	5	5	–		Date: 1/13/10
1X	25.4	8.30	7.77	10.1	6.9	289	5	5	–		Test Solution Prep: RA
2X	25.4	8.21	7.81	9.6	7.1	263	5	4	–		New WQ: JR
4X	25.4	8.11	7.83	9.4	6.7	217	5	5	–		Renewal Time: 1315
											Renewal Signoff: RA
											Old WQ: HV
Meter ID	33A	PH12	PH 09	2001	RDO3	EC03					
Blank	25.7	–	–	–	–	–	5	5	–		Date: 1/19/10
1X	25.7	–	–	–	–	–	5	5	–		Test Solution Prep: – JPC JPC
2X	25.7	–	–	–	–	–	5	4	–		New WQ: –
4X	25.7	–	–	–	–	–	5	5	–		Renewal Time: 1130
											Renewal Signoff: JPC
											Old WQ: –
Meter ID	33A	–	–	–	–	–					
Blank	25.5	–	–	–	–	–	5	5	–		Date: 1/20/10
1X	25.5	–	–	–	–	–	5	5	–		Test Solution Prep: –
2X	25.5	–	–	–	–	–	5	4	–		New WQ: –
4X	25.5	–	–	–	–	–	5 4/4	5 4/4	–		Renewal Time: 0945
											Renewal Signoff: JPC
											Old WQ: –
Meter ID	33A	–	–	–	–	–					
Blank	25.7	–	7.56	–	4.8	354	5	5	–		Date: 1/21/10
1X	25.7	–	7.50	–	4.1	356	4	5	–		Termination Time: 1413
2X	25.7	–	7.65	–	3.8	322	5	4	–		Termination Signoff: JR
4X	25.7	–	7.74	–	5.2	263	5	4	–		Old WQ: EKK
Meter ID	33A		pH09		2001	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical** Organism Log#: 4996 Age: <48h
Test Material: 8/31/09 Inlet to Res B Organism Supplier: Chesapeake
Test ID#: 37393 Project #: 15593 Control/Diluent: EPAMH
Test Date: 1/14/10 Randomization: — Control Water Batch: 1006
Fraction: 75% MeOH

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C	SIGN-OFF
Blank	25.5	7.82		8.6		292	5	5	-	Date: 1/14/10
1X	25.5	7.75		8.4		281	5	5	-	Test Solution Prep: PA
2X	25.5	7.66		8.5		261	5	5	-	New WQ: PA
4X	25.5	7.52		9.3		224	5	5	-	Initiation Time: 1210
										Initiation Signoff: PA
										Sample ID: 22722
Meter ID	33A	PH03		RD02		EC04				
Blank	25.5	8.09	8.05	9.7	7.8	309	5	5	-	Date: 1/15/10
1X	25.5	8.09	8.12	9.4	7.9	292	5	5	-	Test Solution Prep: AB
2X	25.5	8.04	8.01	9.4	7.5	265	5	5	-	New WQ: SG
4X	25.5	7.96	8.11	9.8	7.8	222	5	5	-	Renewal Time: 1430
										Renewal Signoff: MM
										Old WQ: DJ
Meter ID	33A	PH12	PH09	RD03	RD01	EC04				
Blank	25.0	7.98	7.99	11.0	8.6	303	5	5	-	Date: 1/16/10
1X	25.0	7.89	7.96	11.0	8.5	291	5	5	-	Test Solution Prep: SH
2X	25.0	7.85	7.92	10.7	8.1	260	5	5	-	New WQ: SH
4X	25.0	7.78	7.97	10.9	8.1	215	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPC
										Old WQ: JT
Meter ID	33A	PH12	PH12	RD01	RD01	EC04				
Blank	25.1	8.02	7.95	10.0	7.7	298	5	5	-	Date: 1/17/10
1X	25.1	7.99	7.87	9.3	6.2	282	5	5	-	Test Solution Prep: JPC
2X	25.1	7.95	7.77	9.6	5.4	258	5	5	-	New WQ: SG
4X	25.1	7.89	7.73	9.9	4.5	213	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPC
										Old WQ: SG
Meter ID	33A	PH14	PH14	RD02	RD02	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1-14-10 Randomization: —

Organism Log#: 4996 Age: <48 hrs
Organism Supplier: Chesapeake Colt.
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 75% MeOH

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	8.16	7.72	9.5	7.1	293	5	4	-		Date: 1/18/10
1X	25.5	8.11	7.67	9.8	6.6	285	5	5	-		Test Solution Prep: PA
2X	25.4	8.05	7.73	9.4	6.5	258	5	5	-		New WQ: JR
4X	25.4	7.97	7.78	9.4	6.5	215	5	4	-		Renewal Time: 1315
											Renewal Signoff: PA
											Old WQ: HV
Meter ID	33A	PH72	1/1-09	RDO1	RDO7	EC03					
Blank	25.7	—	—	—	—	—	5	4	-		Date: 1/19/10
1X	25.7	—	—	—	—	—	5	5	-		Test Solution Prep: — JPL
2X	25.7	—	—	—	—	—	5	5	-		New WQ: —
4X	25.7	—	—	—	—	—	5	3	-		Renewal Time: 1130
											Renewal Signoff: JPL
											Old WQ: —
Meter ID	33A	—	—	—	—	—					
Blank	25.5	—	—	—	—	—	5	4	-		Date: 1/20/10
1X	25.5	—	—	—	—	—	5	5	-		Test Solution Prep: —
2X	25.5	—	—	—	—	—	5	5	-		New WQ: —
4X	25.5	—	—	—	—	—	5	3	-		Renewal Time: 0845
											Renewal Signoff: JPL
											Old WQ: —
Meter ID	33A	—	—	—	—	—					
Blank	25.7	—	7.52	—	3.9	399	4	4	-		Date: 1/21/10
1X	25.7	—	7.50	—	3.8	340	4	4	-		Termination Time: 1413
2X	25.7	—	7.51	—	3.5	335	4	3	-		Termination Signoff: JR
4X	25.7	—	7.65	—	3.6	304	4	1	-		Old WQ: BWL
Meter ID	33A		pH 09		RDO1	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1/14/10 Randomization: —

Organism Log#: 4996 Age: <48h
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 80% MeOH

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	B	C		SIGN-OFF
Blank	25.5	7.81		8.8		287 PA	5	5	-		Date: 1/14/10
1X	25.5	7.76		8.3		283.3	5	5	-		Test Solution Prep: PA
2X	25.5	7.66		8.3		255.2	5	5	-		New WQ: PA
4X	25.5	7.51		8.7		220 PA	5	5	-		Initiation Time: 1710
											Initiation Signed: PA
											Sample ID: 22772
Meter ID	33A	PH09		RD02		EC04					
Blank	25.5	8.06	8.04	9.7	8.0	305	5	5	-		Date: 1/15/10
1X	25.5	8.07	8.12	9.3	8.0	271	5	5	-		Test Solution Prep: MB
2X	25.5	8.03	8.13	9.3	8.0	267	5	5	-		New WQ: SG
4X	25.5	7.98	8.10	9.2	8.1	223	5	5	-		Renewal Time: 1430
											Renewal Signed: MM
											Old WQ: DJ
Meter ID	33A	PH12	PH09	RD03	RD01	EC04					
Blank	25.0	7.95	7.97	12.1	9.5	303	5	5	-		Date: 1/16/10
1X	25.0	7.86	7.91	10.7	8.2	288	5	5	-		Test Solution Prep: SH
2X	25.0	7.81	7.89	10.5	7.8	260	5	5	-		New WQ: SH
4X	25.0	7.77	7.93	10.7	8.0	215	5	5	-		Renewal Time: 1130
											Renewal Signed: SR
											Old WQ: JT
Meter ID	33A	PH12	PH12	RD01	RD01	EC04					
Blank	25.1	8.01	7.89	9.9	7.0	298	5	5	-		Date: 1/17/10
1X	25.1	7.97	7.79	9.6	6.1	282	5	5	-		Test Solution Prep: JPC
2X	25.1	7.95	7.75	9.5	5.9	259	5	5	-		New WQ: SG
4X	25.1	7.84	7.79	10.1	6.0	213	5	4	-		Renewal Time: 1130
											Renewal Signed: JPC
											Old WQ: SC
Meter ID	33A	PH14	PH14	RD02	RD02	EC05					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1-14-10 Randomization: —

Organism Log#: 4996 Age: 48 hrs
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 80% MeOH

Treatment	Temp (°C)	pH new	pH old	DO (mg/L) new	DO (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	7.93	7.72	10.3	7.5	~~315~~ 273	5	5	-		Date: 1/18/10
1X	25.4	7.94	7.69	10.2	7.0	~~255~~ 281	5	5	-		Test Solution Prep: PA
2X	25.4	7.91	7.65	10.2	7.8 HV	268	3	3	-		New WQ: JR
4X	25.4	7.89	7.64	10.2	5.5	211	0	1	-		Renewal Time: 1315
											Renewal Signoff: PA
											Old WQ: HV
Meter ID	33A	pH12	pH09	RD01	RD03	EC03					
Blank	25.7	—	—	—	—	—	5	4	-		Date: 1/19/10
1X	25.7	—	—	—	—	—	4	5	-		Test Solution Prep: —
2X	25.7	—	—	—	—	—	3	2	-		New WQ: —
4X	25.7	—	—	—	—	—	—	0	—		Renewal Time: 1130
											Renewal Signoff: JPL
											Old WQ: —
Meter ID	33A	—	—	—	—	—					
Blank	25.5	—	—	—	—	—	5	4	-		Date: 1/20/10
1X	25.5	—	—	—	—	—	4	3	-		Test Solution Prep: —
2X	25.5	—	—	—	—	—	2	2	-		New WQ: —
4X JPL ~~25.5~~		—	—	—	—	—	—	—	—		Renewal Time: 0845
											Renewal Signoff: JPL
											Old WQ: —
Meter ID	33A	—	—	—	—	—					
Blank	25.7	—	7.71	—	7.0	330	5	4	-		Date: 1/21/10
1X	25.7	—	7.62	—	5.8	311	4	2	-		Termination Time: 1413
2X	25.7	—	7.70	—	6.3	290	0	1	-		Termination Signoff: JD
4X	25.7	—	—	—	—	—	—	—	—		Old WQ: EAK
Meter ID	33A		pH09		RD01	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1/14/10 Randomization: —

Organism Log#: 4996 Age: <48h
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 85% MeOH

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	SIGN-OFF
Blank	25.5	7.84		8.4		257 30hr	5	5	-	Date: 1/14/10
1X	25.5	7.74		8.3		282	5	5	-	Test Solutions Prep: PA
2X	25.5	7.67		8.3		255	5	5	-	New WQ: PA
4X	25.5	7.56		8.2		233	5	5	-	Initiation Time: 1710
										Initiation Signoff: PA
										Sample ID: 22972
Meter ID	33A	PH03		RD02		EC04				
Blank	25.5	8.06	8.09	9.7	8.0	307	5	5	-	Date: 1/15/10
1X	25.5	8.07	8.08	9.4	8.0	290	5	5	-	Test Solution Prep: KB
2X	25.5	8.03	8.09	9.4	7.9	265	5	5	-	New WQ: SG
4X	25.5	7.97	8.21	10.0	8.1	221	5	5	-	Renewal Time: 1430
										Renewal Signoff: MM
										Old WQ: DS
Meter ID	33A	PH12	PH09	RD03	RD01	EC04				
Blank	25.0	7.87	7.94	11.0	8.5	301	5	5	-	Date: 1/16/10
1X	25.0	7.84	7.92	10.5	9.3	290	5	5	-	Test Solution Prep: SH
2X	25.0	7.80	7.85	10.4	7.8	260	5	5	-	New WQ: SH
4X	25.0	7.78	7.93	11.8	8.1	215	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPC
										Old WQ: JT
Meter ID	33A	PH12	PH12	RD01	RD01	EC04				
Blank	25.1	7.97	7.92	10.2	7.4	297	5	5	-	Date: 1/17/10
1X	25.1	7.97	7.79	9.2	5.8	281	4	5	-	Test Solution Prep: JR
2X	25.1	7.97	7.72	9.6	5.9	258	5	5	-	New WQ: SG
4X	25.1	7.89	7.79	10.2	5.7	213	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPC
										Old WQ: SG
Meter ID	33A	PH14	PH14	RD02	RD02	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1-14-10 Randomization: –

Organism Log#: 4996 Age: <48 hrs
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 85% MeOH

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	8.03	7.67	9.9	7.0	296	5	4	–		Date: 1/18/10
1X	25.4	8.00	7.68	9.7	6.6	284	4	5	–		Test Solution Prep: PA
2X	25.4	7.97	7.68	9.4	6.6	260	3	4	–		New WQ: JC
4X	25.4	7.89	7.69	9.6	5.6	211	0	0	–		Renewal Time: 1315
											Renewal Signoff: PA
											Old WQ: HV
Meter ID	33A	PH1E	TH OR	ED01	ED03	EC03					
Blank	25.7	–	–	–	–	–	5	4	–		Date: 1/19/10
1X	25.7	–	–	–	–	–	4	5	–		Test Solution Prep: –
2X	25.7	–	–	–	–	–	1	3	–		New WQ: –
4X	25.7	–	–	–	–	–	–	–	–		Renewal Time: 1130
											Renewal Signoff: JPC
											Old WQ: –
Meter ID	33A	–	–	–	–	–					
Blank	25.5	–	–	–	–	–	5	4	–		Date: 1/20/10
1X	25.5	–	–	–	–	–	4	2	–		Test Solution Prep: –
2X	25.5	–	–	–	–	–	1	0	–		New WQ: –
4X JPC	25.5	–	–	–	–	–	–	–	–		Renewal Time: 0845
											Renewal Signoff: JPC
											Old WQ: –
Meter ID	33A	–	–	–	–	–					
Blank	25.7	–	7.54	–	5.2	347	5	4	–		Date: 1/21/10
1X	25.7	–	7.49	–	5.0	316	3	1	–		Termination Time: 1413
2X	25.7	–	7.68	–	5.4	324	0	0	–		Termination Signoff: JC
4X	25.7	–	–	–	–	–	–	–	–		Old WQ: EMK
Meter ID	33A		PH09		RD01	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical** Organism Log#: 4996 Age: <48h

Test Material: 8/31/09 Inlet to Res B Organism Supplier: Chesapeake

Test ID#: 37393 Project #: 15593 Control/Diluent: EPAMH

Test Date: 1/14/10 Randomization: — Control Water Batch: 1276

Fraction: 90% MeOH

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	SIGN-OFF
Blank	25.5	7.80		8.1		296	5	5	-	Date: 1/14/10
1X	25.5	7.79		8.1		234	5	5	-	Test Solution Prep: PA
2X	25.5	7.72		8.2		244	5	5	-	New WQ: PA
4X	25.5	7.56		8.7		221	5	5	-	Initiation Time: 1710
										Initiation Signoff: PA
										Sample ID: 2772
Meter ID	33A	PH03		RD02		EC09				
Blank	25.5	8.06	8.04	9.7	7.9	310	5	5	-	Date: 1/15/10
1X	25.5	8.07	8.07	9.4	7.9	288	5	5	-	Test Solution Prep: KB
2X	25.5	8.03	8.13	9.4	8.0	266	5	5	-	New WQ: SG
4X	25.5	7.98	8.17	9.8	8.1	220	5	5	-	Renewal Time: 1430
										Renewal Signoff: MM
										Old WQ: DJ
Meter ID	33A	PH12	PH09	RD03	RD01	EC04				
Blank	25.0	7.85	7.93	10.7	8.6	302	5	5	-	Date: 1/16/10
1X	25.0	7.82	7.90	10.8	8.3	291	5	5	-	Test Solution Prep: SH
2X	25.0	7.80	7.86	10.6	8.0	258	5	5	-	New WQ: SH
4X	25.0	7.74	7.92	11.0	7.9	213	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPE
										Old WQ: JT
Meter ID	33A	PH12	PH13	RD01	RD01	EC04				
Blank	25.1	7.99	7.96	10.3	7.3	300	5	5	-	Date: 1/17/10
1X	25.1	7.97	7.82	9.0	5.7	282	5	5	-	Test Solution Prep: JR
2X	25.1	7.96	7.71	9.5	5.7	258	4	4	-	New WQ: SG
4X	25.1	7.87	7.79	10.3	5.8	212	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPE
										Old WQ: SG
Meter ID	33A	PH14	PH14	RD02	RD02	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical**
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1-14-10 Randomization: –

Organism Log#: 4996 Age: 24hrs
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 90% MeOH

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	8.01	7.75	9.8	7.8	297	5	5	–		Date: 1/18/10
1X	25.4	7.99	7.63	10.1	6.5	269	5	5	–		Test Solution Prep: PA
2X	25.4	7.97	7.71	9.6	6.5	263	3	4	–		New WQ: JR
4X	25.4	7.90	7.71	9.4	6.2	213	2	0	–		Renewal Time: 1315
											Renewal Signoff: PA
											Old WQ: HV
Meter ID	33A	PH12	PH09	RD01	RD03	EC03					
Blank	25.7	–	–	–	–	–	5	5	–		Date: 1/19/10
1X	25.7	–	–	–	–	–	5	5	–		Test Solution Prep: –
2X	25.7	–	–	–	–	–	3	3	–		New WQ: –
4X	25.7	–	–	–	–	–	0	–	–		Renewal Time: 1130
											Renewal Signoff: JPC
											Old WQ: –
Meter ID	33A	–	–	–	–	–					
Blank	25.5	–	–	–	–	–	5	5	–		Date: 1/20/10
1X	25.5	–	–	–	–	–	5	5	–		Test Solution Prep: –
2X	25.5	–	–	–	–	–	2	3	–		New WQ: –
4X	25.5 JPC	–	–	–	–	–	–	–	–		Renewal Time: 0345
											Renewal Signoff: JPC
											Old WQ: –
Meter ID	33A	–	–	–	–	–					
Blank	25.7	–	7.55	–	5.4	360	5	5	–		Date: 1/21/10
1X	25.7	–	7.50	–	4.5	329	5	5	–		Termination Time: AK 1413
2X	25.7	–	7.72	–	6.0	309	2	1	–		Termination Signoff: AK
4X	25.7	–	–	–	–	–	–	–	–		Old WQ: EWC
Meter ID	33A		PH09		RD01	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1/14/10 Randomization: –

Organism Log#: 4996 Age: <48h
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 276
Fraction: 95% MeOH

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	SIGN-OFF
Blank	25.5	7.83		8.6		~~8~~ 300	5	5	-	Date: 1/14/10
1X	25.5	7.80		8.3		270	5	5	-	Test Solution Prep: ~~1/14/10~~ PA
2X	25.5	7.91		8.4		250	5	5	-	New WQ: PA
4X	25.5	7.60		8.4		214	5	5	-	Initiation Time: 1710
										Initiation Signoff: PA
										Sample ID: 2772
Meter ID	33A	PH03		RDO2		EC04				
Blank	25.5	8.05	8.11	9.7	8.3	308	5	5	-	Date: 01/15/10
1X	25.5	8.08	8.09	9.4	8.2	289	5	5	-	Test Solution Prep: AB
2X	25.5	8.06	8.14	9.4	8.1	266	5	5	-	New WQ: SG
4X	25.5	8.03	8.21	9.7	8.2	221	5	5	-	Renewal Time: 1430
										Renewal Signoff: MM
										Old WQ: DJ
Meter ID	33A	PH12	PH09	RDO3		EC04				
Blank	25.0	7.89	7.94	11.0	8.5	303	5	5	-	Date: 1/16/10
1X	25.0	7.81	7.96	10.5	8.5	290	5	5	-	Test Solution Prep: SH
2X	25.0	7.79	7.98	10.8	8.5	261	5	5	-	New WQ: SH
4X	25.0	7.77	8.02	10.9	8.4	213	5	4	-	Renewal Time: 1130
										Renewal Signoff: JPL
										Old WQ: JT
Meter ID	33A	PH12	PH12	RDO1	RDO1	EC04				
Blank	25.1	7.97	7.85	10.1	6.9	301	5	5	-	Date: 1/17/10
1X	25.1	7.98	7.79	9.9	7.1	282	5	5	-	Test Solution Prep: JPL
2X	25.1	7.95	7.75	9.5	6.0	258	5	5	-	New WQ: SG
4X	25.1	7.90	7.78	10.0	5.9	211	4	3	-	Renewal Time: 1130
										Renewal Signoff: JPL
										Old WQ: SG
Meter ID	33A	PH14	PH14	RDO2	RDO2	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: **Precision Analytical** Organism Log#: 4996 Age: <48hrs

Test Material: 8/31/09 Inlet to Res B Organism Supplier: Chesapeake

Test ID#: 37393 Project #: 15593 Control/Diluent: EPAMH

Test Date: 1-14-10 Randomization: — Control Water Batch: 1276

Fraction: 95% MeOH

Treatment	Temp (°C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	8.00	7.67	9.9	7.1	296	5	3	-		Date: 1/18/10
1X	25.4	7.98	7.66	10.1	6.6	286	5	5	-		Test Solution Prep: PA
2X	25.4	7.96	7.74	9.6	6.7	268	5	5	-		New WQ: JR
4X	25.4	7.92	7.78	9.5	6.9	211	4	3	-		Renewal Time: 1315
											Renewal Signoff: PA
											Old WQ: HV
Meter ID	33A	PH12	PH09	ED01	ED03	EC03					
Blank	25.7	—	—	—	—	—	5	3	-		Date: 1/19/10
1X	25.7	—	—	—	—	—	5	5	-		Test Solution Prep: —
2X	25.7	—	—	—	—	—	5	5	-		New WQ: —
4X	25.7	—	—	—	—	—	4	3	-		Renewal Time: 1130
											Renewal Signoff: JPC
											Old WQ: —
Meter ID	33A	—	—	—	—	—					
Blank	25.5	—	—	—	—	—	5	3	-		Date: 1/20/10
1X	25.5	—	—	—	—	—	5	5	-		Test Solution Prep: -
2X	25.5	—	—	—	—	—	5	5	-		New WQ: -
4X	25.5	—	—	—	—	—	4	3	-		Renewal Time: 0845
											Renewal Signoff: JPC
											Old WQ: -
Meter ID	33A	—	—	—	—	—					
Blank	25.7	—	7.61	—	6.1	327	5	3	-		Date: 1/21/10
1X	25.7	—	7.57	—	5.5	310	5	5	-		Termination Time: 1413
2X	25.7	—	7.63	—	5.7	289	4	4	-		Termination Signoff: JC
4X	25.7	—	7.70	—	5.9	242	3	3	-		Old WQ: BM
Meter ID	33A		PH09		ED01	EC03					

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1/14/10 Randomization: —

Organism Log#: 4996 Age: <48h
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 100% MeOH

Treatment	Temp (°C)	pH New	pH Old	D.O. (mg/L) New	D.O. (mg/L) Old	Conductivity (µs/cm)	# Live Organisms A	# Live Organisms B	# Live Organisms C	SIGN-OFF
Blank	25.5	7.85		8.3		292	5	5	-	Date: 1/14/10
1X	25.5	7.81		8.2		270	5	5	-	Test Solution Prep: PA
2X	25.5	7.94		8.3		252	5	5	-	New WQ: PA
4X	25.5	7.58		8.4		214	5	5	-	Initiation Time: 1310
										Initiation Signoff: PA
										Sample ID: 2392
Meter ID	33A	PH09		RDO7		EC09				
Blank	25.5	8.08	8.08	9.7	8.1	310	5	5	-	Date: 01/15/10
1X	25.5	8.09	8.11	9.4	8.2	290	5	5	-	Test Solution Prep: KB
2X	25.5	8.08	8.14	9.4	8.3	266	5	5	-	New WQ: SG
4X	25.5	8.04	8.24	9.9	8.2	221	5	5	-	Renewal Time: 1430
										Renewal Signoff:
										Old WQ: DS
Meter ID	33A	PH12	PH09	RDO3	RDO1	EC09				
Blank	25.0	7.85	7.98	10.9	8.6	300	5	5	-	Date: 1/16/10
1X	25.0	7.83	7.95	10.8	8.6	292	5	5	-	Test Solution Prep: SH
2X	25.0	7.83	8.06	10.6	8.5	241	5	5	-	New WQ: SH
4X	25.0	7.80	8.01	11.0	8.5	214	5	5	-	Renewal Time: 1130
										Renewal Signoff:
										Old WQ: JT
Meter ID	33A	PH12	PH12	RD01	RD01	EC09				
Blank	25.1	7.98	7.93	10.2	7.5	301	5	5	-	Date: 1/17/10
1X	25.1	7.97	7.82	9.4	6.6	284	5	5	-	Test Solution Prep: JPL
2X	25.1	7.98	7.81	9.7	6.5	256	5	5	-	New WQ: SG
4X	25.1	7.93	7.80	10.3	6.1	213	5	5	-	Renewal Time: 1130
										Renewal Signoff: JPL
										Old WQ: SG
Meter ID	33A	PH14	PH14	RD02	RD02	EC05				

7 Day Chronic Fathead Minnow Toxicity Test Data

Client: Precision Analytical
Test Material: 8/31/09 Inlet to Res B
Test ID#: 37393 Project #: 15593
Test Date: 1-14-10 Randomization: —

Organism Log#: 4996 Age: <48hrs
Organism Supplier: Chesapeake
Control/Diluent: EPAMH
Control Water Batch: 1276
Fraction: 100% MeOH

Treatment	Temp (C)	pH new	pH old	D.O. (mg/L) new	D.O. (mg/L) old	Conductivity (µs/cm)	# Live Organisms A	B	C	D	SIGN-OFF
Blank	25.4	8.00	7.75	9.8	7.6	295	5	4	-		Date: 1/18/10
1X	25.4	7.99	7.63	10.1	6.4	284	5	5	-		Test Solution Prep: PA
2X	25.4	7.97	7.72	9.5	6.3	268	5	5	-		New WQ: JL
4X	25.4	7.93	7.80	9.8	6.4	241	5	5	-		Renewal Time: 1315
											Renewal Signoff: PA
											Old WQ: HV
Meter ID	33A	PH12	PH09	RDO1	RDO3	EC03					
Blank	25.7	—	—	—	—	—	4	4	-		Date: 1/19/10
1X	25.7	—	—	—	—	—	3	5	-		Test Solution Prep: —
2X	25.7	—	—	—	—	—	5	5	-		New WQ: —
4X	25.7	—	—	—	—	—	5	4	-		Renewal Time: 1130
											Renewal Signoff: JPC
											Old WQ: —
Meter ID	33A	—	—	—	—	—					
Blank	25.5	—	—	—	—	—	3	4	-		Date: 1/20/10
1X	25.5	—	—	—	—	—	3	3	-		Test Solution Prep: —
2X	25.5	—	—	—	—	—	5	5	-		New WQ: —
4X	25.5	—	—	—	—	—	4	4	-		Renewal Time: 0845
											Renewal Signoff: JPC
											Old WQ: —
Meter ID	33A	—	—	—	—	—					
Blank	25.7	—	7.70	—	6.5	339	3	4	-		Date: 1/21/10
1X	25.7	—	7.54	—	5.1	346	3	3	-		Termination Time: 1413
2X	25.7	—	7.79	—	7.2	289	5	5	-		Termination Signoff: JR
4X	25.7	—	7.89	—	7.2	257	3	4	-		Old WQ: GMC
Meter ID	33A		PH09		RDO1	EC03					